
No. 13289

In the
United States
Court of Appeals
For the Ninth Circuit

STATE OF WASHINGTON DEPARTMENT OF GAME;
STATE OF WASHINGTON DEPARTMENT OF FISH-
ERIES; and WASHINGTON STATE SPORTSMEN'S
COUNCIL, INC., a corporation, *Petitioners,*

v.

FEDERAL POWER COMMISSION,
CITY OF TACOMA,

Respondent.
Intervener.

REVIEW OF ORDERS OF THE FEDERAL
POWER COMMISSION

OPENING BRIEF FOR PETITIONERS

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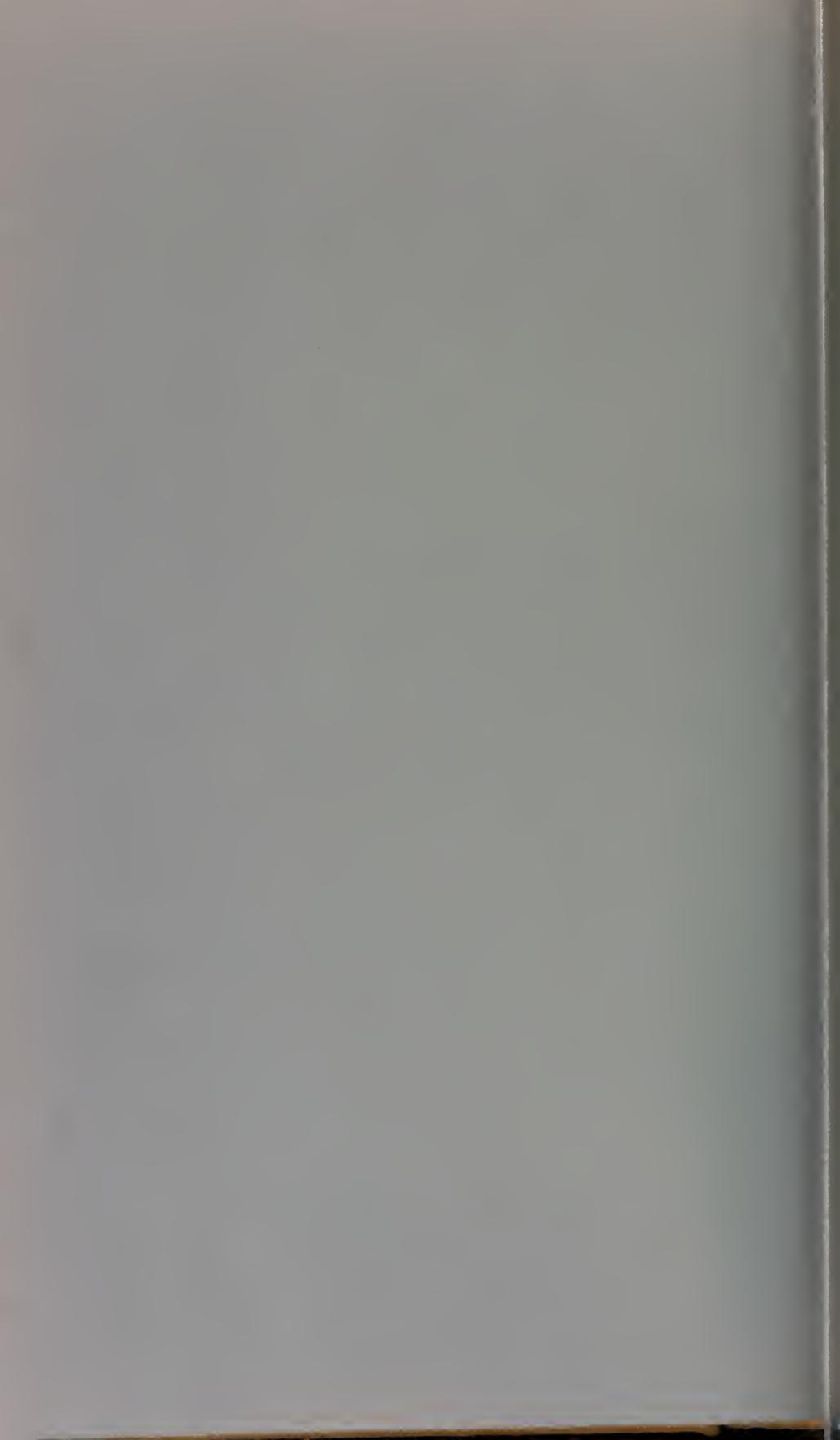
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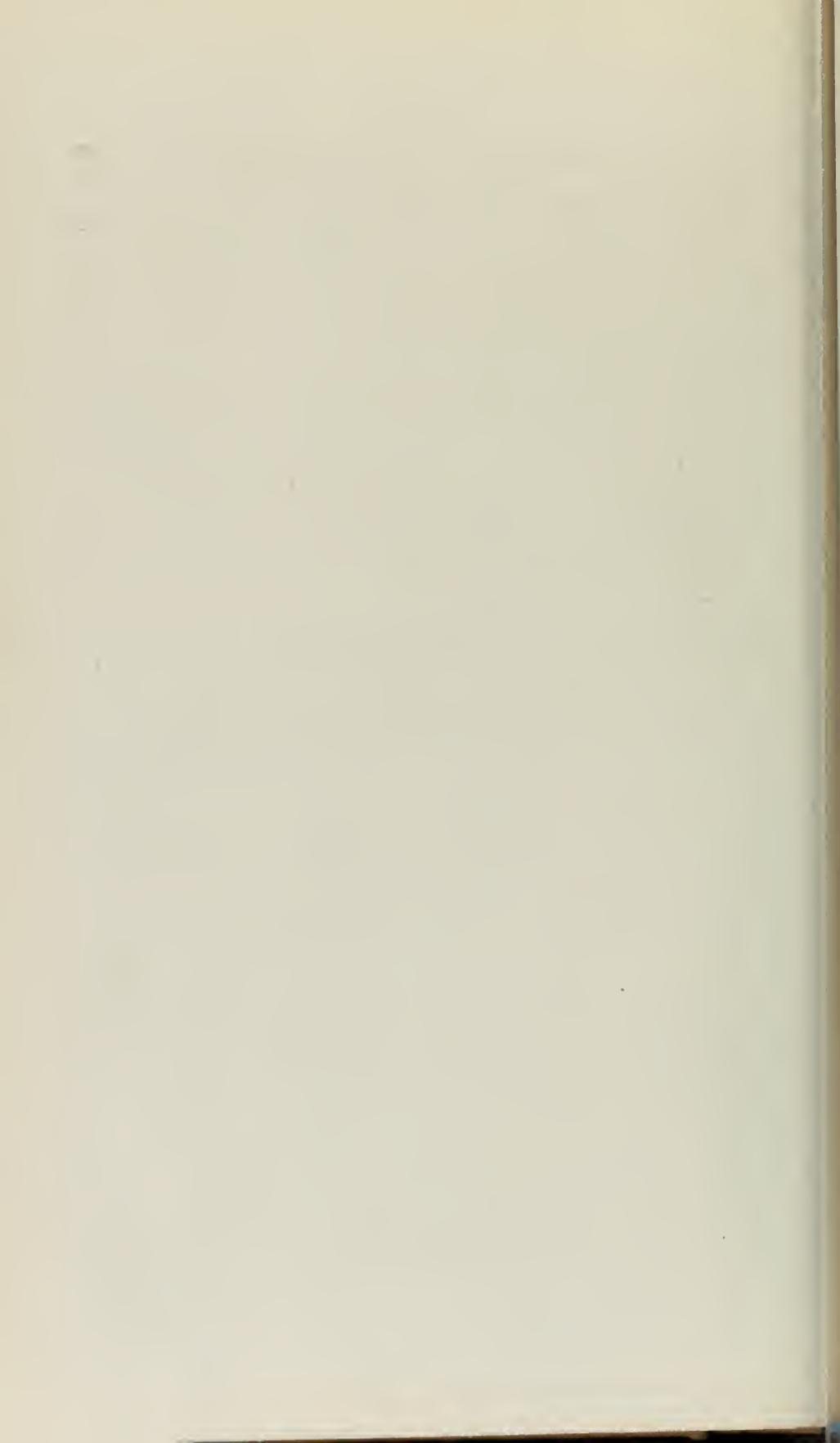
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INDEX

	<i>Page</i>
I. JURISDICTIONAL STATEMENT	2
II. STATEMENT OF THE CASE	3
The Parties	3
The Proposed Project	3
Conflict with State Laws	4
Power Situation	4
The River and Its Fishery	6
The Comprehensive Plan for the Columbia Basin	7
The Lower Columbia River Fisheries Plan	10
The Proposed Fish Facilities	12
The Examiner's Proposed Order	13
The Commission's Order	14
Questions Involved	14
III. SPECIFICATION OF ERRORS	16
Assignments of Error Relating to Jurisdiction and Legal Authority of the Commission to Enter Its Order of November 28, 1951	16
Assignments of Error Predicated Upon the Lack of Substantial Evidence in the Record to Support the Several Basic Findings and Conclusions as Contained in the Order of November 28, 1951	18
Assignments of Error Relating to the Specific Provisions and Articles of the Order of November 28, 1951, insofar as They Do Not Provide Properly for the Effectiveness of the Fish Protective Devices, Provide for Management of a State Resource by a Municipality and Purport to Provide for Further Proceeding Without Opportunity for Petitioners to Be Heard	26

INDEX—*Continued*

	<i>Page</i>
IV. SUMMARY OF ARGUMENT.....	29
V. ARGUMENT	32
A. THE FEDERAL POWER COMMISSION WAS WITHOUT JURISDICTION AND LEGAL AUTHORITY TO ENTER ITS ORDER OF NOVEMBER 28, 1951, AND TO ISSUE A LICENSE TO THE CITY OF TACOMA.....	32
1. The City of Tacoma Has Not Complied with Applicable Laws of the State of Washington and Therefore Cannot Be Issued a License to Build These Proposed Dams Upon the Cowlitz River	32
2. The Several Statutes of the State of Washington with Which the City of Tacoma Has Not Complied Are Valid Enactments Within the Exclusive Jurisdiction of the State Under Its Police Power.....	38
3. The Several Statutes of the State of Washington Are Not Superseded by the Federal Power Act and Such Act Does Not Authorize the Granting of a License to the City of Tacoma	48
4. The City of Tacoma as a Municipal Corporation Has No Rights Apart From the State of Washington, Nor in Derogation of State Laws, and Therefore the Said City Cannot Be Licensed by the Federal Power Commission to Build These Dams.....	68
B. THERE IS NO SUBSTANTIAL EVIDENCE IN THE RECORD TO SUPPORT THE BASIC FINDINGS AND CONCLUSIONS IN THE ORDER OF NOVEMBER 28, 1951.....	75

INDEX—*Continued*

- | | <i>Page</i> |
|--|-------------|
| 1. The Commission Has Exceeded the Power Conferred Upon It and Has Not Fulfilled the Obligation Imposed Upon It by Section 10 (a) of the Federal Power Act, and Upon the Entire Record Has Acted Arbitrarily and Capriciously..... | 76 |
| 2. There Is No Substantial Evidence to Support the Several Findings and Conclusions Contained in the Opinion and Order of November 28, 1951 That There Is and Will Be a Severe Power Shortage in the Pacific Northwest for the Next Seven to Ten Years; That a Federal Program of Construction Will Not Alleviate That Condition; That Construction of the Dams as Proposed by the City of Tacoma Will Alleviate Any Power Shortage; That There Are Not Alternate Sources of Power That Will Supply the Same Energy Capable of Being Produced by These Proposed Dams; That the Project Proposed by the City Is Necessary in the Interest of National Defense; and That the Benefits to Be Derived From These Dams Outweigh the Fisheries Values and All Other Considerations | 80 |
| 3. There Is No Substantial Evidence to Support the Several Findings and Conclusions in the Opinion and Order of November 28, 1951 That the Fish Runs in the Cowlitz River Will Not Be Substantially Destroyed by the Proposed Dams; That | |

INDEX—*Continued*

	<i>Page</i>
Any Substantial Portion of Such Fish Runs Can Be Saved If the Dams Are Constructed; That Any Substantial Benefit Will Be Derived From the City's Proposed Conservation Practices, Facilities and Improvement of Fish Habitat; and That Hatcheries Proposed by the City Can Be Constructed, Operated and Maintained for the Cost Arrived at by the Commission, and the Commission's Values of Power Benefits and Fishery Resources	90
C. THE ORDER OF NOVEMBER 28, 1951, CONSTITUTES AN UNLAWFUL EXTENSION OF THE AUTHORITY OF THE COMMISSION UNDER THE FEDERAL POWER ACT IN THAT ITS SPECIFIC PROVISIONS DO NOT PROVIDE FOR THE DETERMINATION OR ADEQUATE TESTING OF THE EFFECTIVENESS OF THE FISH PROTECTIVE DEVICES; PROVIDES FOR THE MANAGEMENT OF STATE FISHERY RESOURCES BY THE CITY OF TACOMA; AND PURPORTS TO PROVIDE FOR FURTHER ESSENTIAL PROCEEDINGS WITHOUT OPPORTUNITY FOR PETITIONERS TO BE HEARD	105
VI. CONCLUSION	110
APPENDIX A	111
APPENDIX B	149
APPENDIX C	153
APPENDIX D	161

TABLE OF CASES

	<i>Page</i>
Alabama Power Co. v. Gulf Power Co., 283 F. 606, 619	61, 62, 63
Allen-Bradley Local, etc. v. Wisconsin Employ- ment Retirement Board, 315 U. S. 740, 62 S. Ct. 82, 86 L. Ed. 1154.....	52
Anthony v. Veatch, 220 P. (2d) 493 (Ore. 1950)	64
Bacon v. Walker, 204 U. S. 311, 51 L. Ed. 499..	57
Batchelor v. Madison Park Corporation, 25 Wn. (2d) 907, 172 P. (2d) 268.....	69
Carey v. South Dakota, 250 U. S. 118, 39 S. Ct. 403, 63 L. Ed. 886.....	52
Carolina Aluminum Company v. Federal Power Comm., 97 F. (2d) 435.....	76
Casco Co. v. P. U. D. No. 1, 37 Wn. (2d) 777, 226 P. (2d) 235.....	67
Cawsey v. Brickey, 82 Wash. 653, 144 Pac. 938.	43
Christie v. The Port of Olympia, 27 Wn. (2d) 534, 179 P. (2d) 294.....	69
City and County of Denver v. Sheriff, Colo. (1939), 96 P. (2d) 836.....	64
City of Tacoma v. Nisqually Power Co., 57 Wash. 420, 107 Pac. 199.....	65
Cook v. State, 192 Wash. 602, 74 P. (2d) 199..	43
Currin v. Wallace, 306 U. S. 1, 83 L. Ed. 441...	66
Davis v. Olsen, 128 Wash. 393, 222 Pac. 891..	44, 47
Farwell v. City of Seattle, 43 Wash. 141, 86 Pac. 217	69
First Iowa Hydro-Electric Cooperative v. Fed- eral Power Commission, 328 U. S. 152, 90 L. Ed. 1143 (1946) .54, 57, 58, 59, 60, 61, 63,	65

TABLE OF CASES—*Continued*

	<i>Page</i>
Ford and Son v. Little Falls Fibre Co., 280 U. S. 369, 74 L. Ed. 483.....	53
Foster Fountain Packing Co. v. Haydel, 278 U. S. 16, 73 L. Ed. 155.....	43
Geer v. Connecticut, 161 U. S. 519, 40 L. Ed. 793	64
Gooch v. United States, 297 U. S. 124, 80 L. Ed. 522	62
Grand River Dam Authority v. Grand-Hydro, 335 U. S. 359, 93 L. Ed. 64.....	54
Graves v. Dunlap, 87 Wash. 648; 152 Pac. 532..	43
Hartford Electric Light Company v. Federal Power Commission, 131 F. (2d) 953.....	52
Holyoke Water Power Co. v. Lyman, 82 U. S. 500, 21 L. Ed. 133.....	43, 45, 46
H. P. Welch Co. v. New Hampshire, 306 U. S. 79, 59 S. Ct. 438, 83 L. Ed. 500.....	52
Hunter v. Pittsburg, 207 U. S. 161, 52 L. Ed. 151	69
In Re Slaughterhouse Cases, 83 U. S. 36, 21 L. Ed. 394	57
International Union U. A. W. v. Wisconsin Employment Retirement Board, 336 U. S. 245, 69 S. Ct. 516, 93 L. Ed. 651.....	52
Johnson v. Haydel, 278 U. S. 16, 73 L. Ed. 155..	43
LaCoste v. Dept. of Conservation of Louisiana, 263 U. S. 545, 68 L. Ed. 437.....	43
Lake Shore & M. S. Ry. Co. v. State of Ohio, 173 U. S. 285, 43 L. Ed. 702.....	57
Lawton v. Steele, 152 U. S. 133, 38 L. Ed. 385	43, 64
Mason v. U. S., 260 U. S. 545, 67 L. Ed. 396....	62
McCready v. Virginia, 94 U. S. 291, 24 L. Ed. 248	44, 47
McMillan v. Sims, 129 Wash. 516, 225 Pac. 240, 132 Wash. 265, 231 Pac. 943.....	43

TABLE OF CASES—*Continued*

	<i>Page</i>
Mid-Northern Oil Co. v. Walker, 268 U. S. 45, 69 L. Ed. 841.....	62
Montana Power Co. v. Federal Power Comm., 112 F. (2d) 371.....	76
Mosebar v. Moore, 141 Wn. Dec. 203 (Septem- ber 25, 1952).....	71
Niagara-Mohawk Power Corp. v. Federal Power Commission, U. S. Ct. of Ap., Dist. Col., De- cember 31, 1952, unreported.....	68
N. W. Electric Co. v. Federal Power Comm., 125 F. (2d) 882.....	76
Pacific First Federal Svgs. & Loan Assn. v. Pierce County, 27 Wn. (2d) 347, 178 P. (2d) 351	69
Pacific Power & Light Co. v. Federal Power Comm., 98 F. (2d) 835, 307 U. S. 156, 83 L. Ed. 1180, 111 F. (2d) 1014.....	75
Parker v. State, 111 Ill. 581.....	46
Pregg v. Commonwealth of Pennsylvania, 41 U. S. 539, 10 L. Ed. 1060.....	57
Reid v. Colorado, 187 U. S. 137, 23 S. Ct. 92, 47 L. Ed. 108	52
Rice v. Santa Fe Elevator Corp., 331 U. S. 218, 67 S. Ct. 1146, 91 L. Ed. 1447.....	52
Silz v. Hesterberg, 211 U. S. 31, 53 L. Ed. 75..	64
Skiriotes v. Florida, 313 U. S. 69, 85 L. Ed. 1193	43
State v. Aberdeen, 34 Wash. 61, 74 Pac. 1022..	69
State v. Nelson, 146 Wash. 17, 261 Pac. 796..	43
State v. Plastino, 67 Wash. 374, 121 Pac. 851..	62
State v. Tice, 69 Wash. 403, 125 Pac. 168....	43
State v. Tiffany, 44 Wash. 602, 87 Pac. 932...	64

TABLE OF CASES—*Continued*

	<i>Page</i>
State v. Towessnute, 89 Wash. 479, 154 Pac. 805	41, 43
State v. Tulee, 7 Wn. (2d) 124, 109 P. (2d) 280	43
State v. Van Vlack, 101 Wash. 503, 172 Pac. 563	64
State ex rel. Bacich v. Huse, 187 Wash. 75, 59 P. (2d) 1101.....	43
State ex rel. Campbell v. Case, 182 Wash. 334, 47 P. (2d) 24.....	42, 43
State ex rel. McMannis v. Superior Court for Whitman County, 92 Wash. 360, 159 Pac. 383	69
State ex rel. Washington Water Power Co. v. Superior Court, 34 Wn. (2d) 196 at page 204, 208 P. (2d) 849.....	57
Staughton v. Baker, 4 Mass. 521.....	46
Steward Machine Company v. Davis, 301 U. S. 548, 81 L. Ed. 1279.....	66
Trenton v. New Jersey, 262 U. S. 182.....	73
Union High School Dist. No. 1, Skagit County v. Taxpayers of Union High School Dist., 26 Wn. (2d) 1, 172 P. (2d) 591.....	70
U. S. v. Alpers, 338 U. S. 680, 94 L. Ed. 457..	62
U. S. v. Appalachian Electric Light Co., 311 U. S. 377, 85 L. Ed. 243, 61 S. Ct. 291...57,	58
United States v. Cress, 243 U. S. 316, 61 L. Ed. 746	65
United States v. Gerlach Live Stock Co., 339 U. S. 725, 70 S. Ct. 955, 94 L. Ed. 1231....	55
U. S. v. Mescall, 215 U. S. 26, 30 S. Ct. 19, 54 L. Ed. 77	62
U. S. v. Petrillo, 68 F. Supp. 845.....	66

TABLE OF CASES—*Continued*

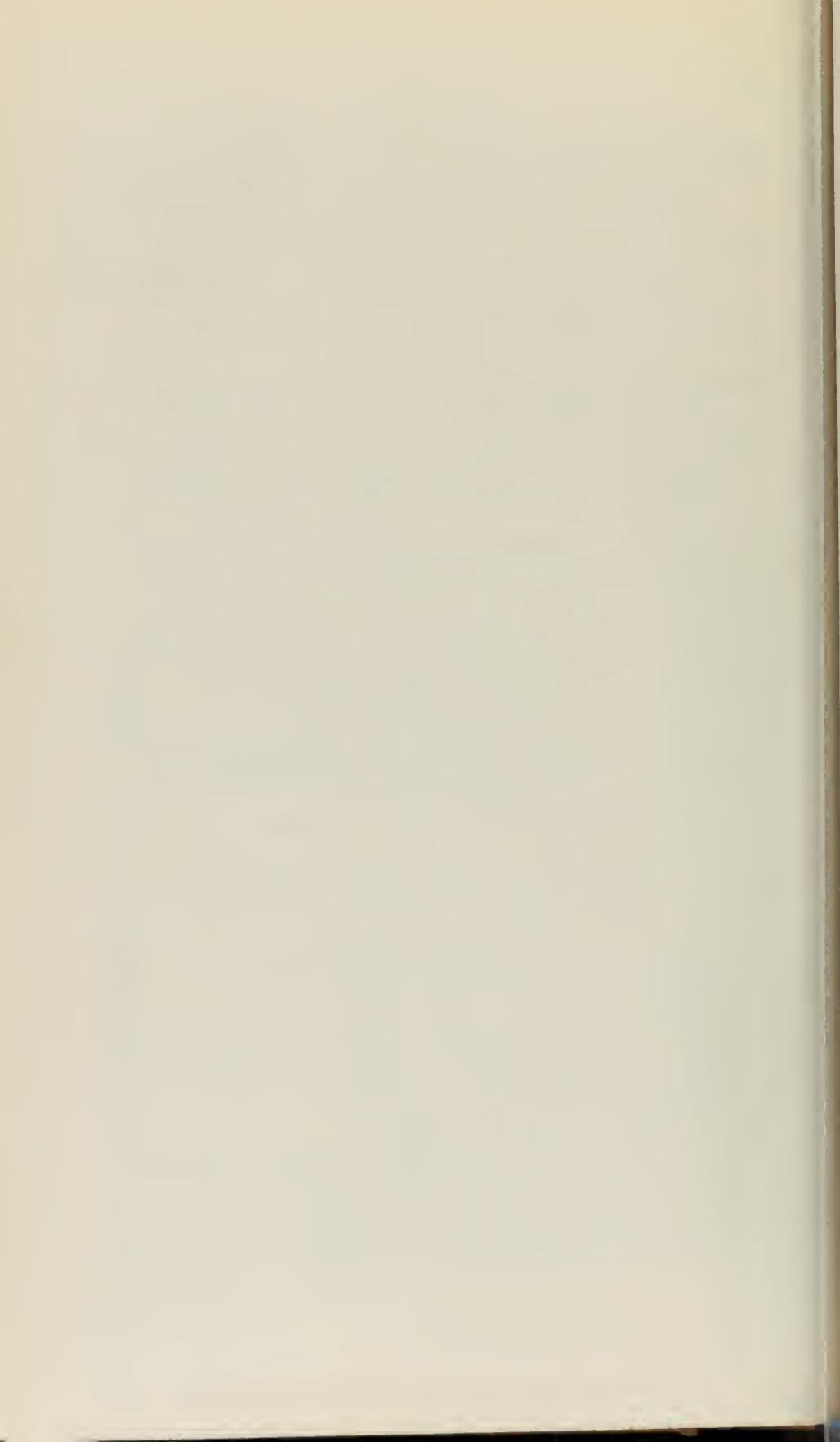
	<i>Page</i>
Vail v. Seaborg, 120 Wash. 126, 207 Pac. 15. . 43,	64
Wheeler School District of Grant Co. v. Hawley, 18 Wn. (2d) 37, 137 P. (2d) 1010.	70
Williams v. Mayor of Baltimore, 289 U. S. 36, 77 L. Ed. 1015.	73
Worcester v. Worcester Consolidated Street Ry. Co., 196 U. S. 539, 49 L. Ed. 591.	69

TEXTBOOKS AND MISCELLANEOUS

	<i>Page</i>
Congressional Record, Vol. 51, Page 13630	60
2 McQuillin Municipal Corporations, 1949, Page 37, Section 4.17	72
2 McQuillin Municipal Corporations, 1949, Page 578, Section 10.03	71
2 McQuillin Municipal Corporations, 1949, Page 592, Section 10.09	71
5 McQuillin Municipal Corporations, 1949, Page 96, Section 15.20	71
6 McQuillin Municipal Corporations, 1949, Page 246, Section 21.34	71
6 McQuillin Municipal Corporations, 1949, Page 391, Section 23.07	71
22 American Jurisprudence, Page 695	44
36 Michigan Law Review, Pages 385-396	73
116 American Law Reports, Page 1037	74
Report No. 1114, House of Representatives, Committee on Public Works, upon Resolu- tion No. 4963 (October 9, 1951)	85

STATUTES

	<i>Page</i>
Columbia River Sanctuary Act, Chapter 9, Section 1, Laws of Washington, 1949, R.C.W. 75.20.010	34, 41, 65, 69, 70, 79
Chapter 9, Section 2 of the Laws of Washington, 1949, R.C.W. 75.20.020	34, 44
Chapter 112, Section 46, Laws of Washington, 1949, R.C.W. 75.20.050	35
Chapter 112, Section 49, Laws of Washington, 1949, R.C.W. 75.20.100	36, 46, 47, 48
Water Code of the State of Washington, Chapter 117, Laws of Washington, 1917, R.C.W. 90.20	37
Chapter 117, Section 27, Laws of Washington, 1917, R.C.W. 90.20.010	37, 65
Chapter 103, Section 3, Laws of Washington, 1921, R.C.W. 90.24.070	37, 65
Territorial Laws of Washington, 1875	38
Territorial Laws of Washington, 1877	39
Chapter 8, Laws of the State of Washington, 1889-90, Page 233	39
Administrative Procedure Act, Section 10, 5 U. S. C. 1009	2
Federal Power Act, 49 Stat. 863, 16 U. S. C. 791a, et seq.	48
Section 3 (7), 16 U. S. C. 796	49
Section 4 (c), 16 U. S. C. 797	49
Section 6, 16 U. S. C. 799	53
Section 9 (b), 16 U. S. C. 802	17, 29, 49
Section 10 (a), 16 U. S. C. 803	18, 30, 80, 87
Section 10 (c), 16 U. S. C. 803	53
Section 14, 16 U. S. C. 807	49
Section 21, 16 U. S. C. 814	50, 53
Section 27, 16 U. S. C. 821	17, 29, 48, 50, 53, 62
Section 201 (a), 16 U. S. C. 824	51
Section 202 (a), 16 U. S. C. 824a	51
Section 313 (b), 16 U. S. C. 825l	2, 75



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I. JURISDICTIONAL STATEMENT

1. Jurisdiction of this Court is based upon Section 313(b) of the Federal Power Act, U. S. C., Title 16, Section 8251; and is also based upon Section 10 of the Administrative Procedure Act, U. S. C., Title 5, Section 1009. This Petition for Review is made for the purpose of reviewing certain orders of the Federal Power Commission.

2. The pleadings and facts necessary to show the existence of the jurisdiction are as follows:

Application was filed on December 28, 1948, and later supplemented by the City of Tacoma, Washington, for a license under the Federal Power Act for a proposed hydroelectric development designated as Project Number 2016, to be located on the Cowlitz River in Lewis County, Washington (Tr. 1).

The two State Departments are parties to this proceeding by virtue of an order of the Commission permitting intervention, issued October 23, 1950 (Tr. 32). Washington State Sportsmen's Council, Inc. is a party to this proceeding by virtue of an order of the Commission permitting intervention, issued October 30, 1950 (Tr. 40).

Following public hearings, submission of testimony, exhibits and briefs, a recommended decision by the Presiding Examiner, exceptions filed thereto and oral argument, the findings and basic order now under review were issued on November 28, 1951 (Tr. 537).

On December 26, 1951, within the time prescribed by statute, Petitioners filed with the Commission their Petition and Application for Rehearing (Tr. 460).

On January 24, 1952, the Commission issued its order denying such Petition and Application for Rehearing (Tr. 579).

Within the time prescribed by statute and on March 12, 1952, the Petition for Review was filed in this Court (Tr. 686).

II. STATEMENT OF THE CASE

The Parties.

The State of Washington is a Sovereign State of the United States, and the State of Washington Department of Game and the State of Washington Department of Fisheries are each a department and subdivision thereof, charged with the duty of enforcing its laws, rules and regulations relative to the conservation of food fish and game fish.

The Washington State Sportsmen's Council, Inc. is a non-profit corporation organized under the Laws of the State of Washington, with a membership of over 20,000 residents of the State and is dedicated to the preservation and protection of the resources of the State of Washington and their recreational value to the citizens thereof.

The Federal Power Commission is an administrative body of the Federal Government entrusted with the administration of the Federal Power Act.

The City of Tacoma is a Municipal Corporation of the State of Washington, incorporated under the laws of said state.

The Proposed Project.

The project proposed by the City of Tacoma would consist of two dams on the Cowlitz River, one at Mossyrock and the other at Mayfield, together with appurtenant reservoirs, generating facilities, and alleged fish protective facilities.

The Mossyrock Dam located at river mile 65, would rise 325 feet above tailwater and its reservoir would extend some 21 miles upstream.

The Mayfield Dam located at river mile 52, would rise 185 feet above tailwater and its reservoir would extend upstream to the tailwater of the Mossyrock Dam, a distance of about 13½ miles.

Conflict with State Laws.

Both of these dams are situated within the migratory range of the anadromous fish that utilize the Cowlitz River and their construction is expressly prohibited by the State Statute, commonly called the Sanctuary Act, which makes fish sanctuaries out of the Cowlitz River and other lower Columbia River tributaries and prohibits the construction of dams over 25 feet in height on such rivers within the migratory range of anadromous fish. This statute is fully set forth and discussed in the argument herein.

The City of Tacoma has not obtained a hydraulic permit from the State for the construction of the dams and the right to use the water of the river as required by the state law.

It has likewise failed to obtain the approval of the Director of Fisheries and the Director of Game of the State of Washington for its proposed fish protective facilities in connection with the dams as required by state law.

Power Situation.

The City of Tacoma is a participating member of the Northwest Power pool which consists of all of

the principal generating facilities of the northwest, and which are so inter-connected and operated that the entire generating facilities of the region are placed in a common pool to serve the demands of the area as an integrated system (Tr. 1061-1064). At the present time the power generating facilities of the City of Tacoma, together with purchases from Bonneville Power Administration, are ample to meet its present power requirements. As a municipality, the City of Tacoma enjoys a preferential right to the purchase of Bonneville Power and could increase its purchases from that agency if necessary. Because of its preferential status as a municipality and because of the integrated operation of the Northwest Power pool, it is necessary to consider the power situation for the entire area served by the Northwest Power pool in order to properly evaluate the power value of the city's proposed project. In this connection, as is fully set forth in the record, it is important to note that there are presently under consideration, or authorized for construction, many major generating facilities in the upper Columbia River Basin which will furnish substantially additional power to all participants of the Northwest Power pool, including Tacoma. The city contends that the Cowlitz projects would be of considerable value to itself and the other members of the power pool since it is capable of being constructed within a three-year period and could be expected to furnish power before some of the federal construction can be completed. The attention of the Court is respectfully directed to

Appendix C to this brief in which the Examiner sets forth a scholarly discussion of Tacoma's need for additional power as related to regional needs.

The River and Its Fishery.

The Cowlitz River drains the western slope of the Cascade Range from Mount Rainier south to Mount Adams and Mount St. Helens, all in southwestern Washington. From its headwaters in the glaciers of Mt. Rainier the river flows generally southwest a distance of 67.7 miles to its junction with the Columbia River at Longview, Washington. The entire river and all of its watershed are wholly within the State of Washington.

The watershed of the Cowlitz is in a remote and isolated part of the state. Except for some areas which have been logged, almost all of the watershed remains in a natural, primitive condition. The watershed is almost entirely devoid of industrial development, and the river and its tributaries have but few diversions for agricultural or domestic purposes. The flow of the river system is largely the same as it was prior to the advent of the white man's civilization. This fact, together with the temperature, food content and chemical qualities of the water, make the river system an ideal environment for the propagation of anadromous fish (Tr. 2929-2932, Ex. 30, p. 1).

The Cowlitz River is the most important producer of fish in the lower Columbia River system (below Bonneville Dam) and in the entire Columbia

basin is exceeded in this respect only by the Snake River (Tr. 2932, 2388, Ex. 30, p. 1).

The principal species of fish produced in the waters of the Cowlitz are spring Chinook salmon, fall Chinook salmon, silver salmon, steelhead trout, cutthroat trout and smelt. (See Biological Supplement in Appendix.)

The gross annual value of the salmon produced in the river has been conservatively placed at \$2,000,000.00, with about half being produced above the Mayfield dam site and half below (Ex. 30, p. 2; Tr. 2854; Ex. 25, pp. 7-8).

The steelhead and cutthroat trout are not fished commercially but provide an important recreational fishery difficult to measure in a monetary manner, and which contributes greatly to "better living" in the area (Ex. 25, p. 5).

The smelt, whose annual commercial value has been as high as \$300,000.00, spawn in the main river below Mayfield (Tr. 2972).

The Comprehensive Plan for the Columbia Basin.

To evaluate properly the importance of the Cowlitz as a producer of fish and to weigh this value against the power benefits to be derived from the proposed project, it is necessary to briefly note some of the history of the Columbia River basin and the plans of private, state, and Federal agencies for its development.

Before the arrival of the white man in the northwest the entire Columbia River system, from its

headwaters in Canada to its mouth, was extensively used for the propagation of anadromous fish, particularly salmon (Tr. 3595-3596; Ex. 43-A). However, civilization brought environmental changes such as divided watersheds, industrial pollution, irrigation diversions, and physical barriers such as dams, log jams, etc., that have made vast portions of the river system either unsuitable or inaccessible for anadromous fish. The Coulee Dam alone made inaccessible hundreds of miles of what were once excellent spawning grounds for salmon. The same result has been accomplished on a smaller scale by dams on tributary streams. It is presently estimated that when all dams now in construction, or authorized for construction, are completed, that more than 70% of the entire river system will be forever lost for fish propagation (Tr. 3597-3610, Ex. 43-6).

The preservation of a substantial part of the remaining fish populations in the Columbia River system has been a matter of great concern to the state and Federal agencies responsible for planning the orderly development of the Columbia River basin, and after exhaustive study and analysis they have prepared a program which, if followed, will permit the development of all of the resources of the area without the sacrifice of any.

This plan is set forth in the "Review Report on Columbia River and Tributaries", prepared by the Corps of Engineers, and officially noted in this matter. The report was submitted to the Secretary

of Army on June 28, 1949, and was thereafter submitted to Congress.

Basically, the plan provides for the development of the upper river system for power, reclamation and related purposes and the preservation of the lower river system for the propagation of fish.

The plan is much too lengthy to review in detail. Suffice to say that it reviews in detail the potentialities of all the streams in the river systems and outlined the manner in which they might best be developed to serve the economy of the area (Tr. 93-102).

In this connection it is pertinent to note that the report outlines in detail the resources of the Cowlitz River system and specifically notices the power potential of the Mayfield and Mossyrock sites. However, the development of the river for power, flood control and navigation is not recommended because of the conflict with the fishery resources of the river (Tr. 99).

After agreement was effected between the Corps of Engineers and the Bureau of Reclamation, the plan was submitted for comment to various Federal agencies, including the Federal Power Commission. On June 21, 1949, the Commission wrote the Chief of Engineers a letter in which it approved the plan as constituting a "desirable and coordinated basic framework for the comprehensive development and utilization of the water resources of the Columbia River" (House Document 531, Tr. 98).

The Lower Columbia River Fisheries Plan.

As a supplement to the comprehensive plan the U. S. Fish & Wildlife Service developed the Lower Columbia River Fisheries Plan. This plan was officially noted by Chief of Engineers who recommended favorable consideration of the plan by Congress (Tr. 86-93).

The fisheries plan provides for increasing the fish producing potential of the Lower Columbia River streams, including the Cowlitz, by stream improvement, removal of barriers, hatcheries, abatement of pollution, screening of diversions, etc. (Tr. 88). Under the plan the actual work would be financed by Federal funds and would be performed by the States of Oregon and Washington under the supervision of the U. S. Fish and Wildlife Service (Ex. 33).

While Congress has not formally approved this plan, it provided \$1,000,000 in 1949, \$1,100,000 in 1950, and \$2,205,000 in 1951, to carry out the program which contemplates the expenditure of \$20,000,000 over a ten year period (Ex. 30, p. 1).

The wholehearted endorsement by the State of Washington of the comprehensive plan and the fisheries plan is evidenced by the action of its legislature, which in 1949 passed what is commonly referred to as the "Sanctuary Act", which is fully set out hereafter. The law, in effect, makes fish sanctuaries out of the tributaries of the Lower Columbia River, including the Cowlitz, and prohibits the construction of structures in the rivers over 25 feet in height. There

is no dispute that the terms of the Act prohibit the construction of the dams in question.

Another independent agency has studied and reported on the problem of best utilizing the water resources of the Columbia basin. The President's Water Resources Policy Commission discusses the Columbia at length in Volume 11, "Ten Rivers in America's Future". The problem of the Cowlitz is specifically mentioned (Tr. 189-195). The view of the President's Commission can be best summarized by stating that they agree with the opinion of the Corps of Engineers that the greatest good will be accomplished by preserving the integrity of the Lower Columbia River Fishing Plan by deferring multi-purpose development of sanctuary streams (including Cowlitz) until the power requirements of the future make necessary the development of the full power potential of the entire Columbia River system (Tr. 189-195).

While the U. S. Fish and Wildlife Service did not appear as a party in this controversy, two of its staff appeared and stated that their views and the material they presented represented the official view of the department and had been formally approved by the department's highest officials. One of these, Mr. Barnaby, in speaking of the Columbia River fisheries plan, stated, "The Cowlitz may be considered as a keystone of that program and nothing should be done that might diminish or jeopardize its present or potential productivity". (Ex. 30, p. 2.)

He was also of the opinion that the program might as well be abandoned if the dams are built.

The foregoing constitutes the policies determined by all interested agencies at the time the city's application was under consideration by the Federal Power Commission (See Appendix B).

Against this background the case was heard by the Federal Power Commission. Over 4,000 pages of testimony were taken.

It should be noted that the suitability of the proposed sites for the generation of power (if all other considerations were ignored), the adequacy of the designs (excluding fish protective facilities), and the ability of the City to finance the same were never in issue.

The Proposed Fish Facilities.

Most of the testimony was devoted to the question of whether the proposed fish facilities, or any fish facilities that might be proposed in view of the available knowledge on this subject, would be able to preserve the runs of fish now utilizing the river. The Petitioners, as interveners in the above proceedings, produced 13 expert witnesses on this subject. They constituted a group of trained biologists and engineers who for years have worked in the salmon resource field and who, individually, and as a group, have participated in the design of every major salmon protective facility in our country and Canada. They were of the opinion that there is no known method of maintaining productive runs of

fish above these proposed dams. They were further of the opinion that the proposed dams would have a damaging effect on the runs of fish below the dams (Ex. 30, pp. 3-6; Tr. 2141, 2924, 2921, 3006, 3264, 3265).

The applicant (City) produced but one expert witness on this question. While his general background as a fishery biologist was broad, his experience with salmon was limited and his participation in the design of salmon protective facilities was nil. He, alone, among all the experts, held hope that the protective facilities could be made to work, but conceded that more experimentation was needed (Tr. 1692, 1693, 1697, 1698, 1699, 1700, 1703, 1704, 1705, 1710, 1722, 1725, 1727, 1731, 1737, 1738).

The attention of the court is respectfully directed to Appendix D which contains the Biological Supplement to Recommended Decision. In these pages the Presiding Examiner has compiled a masterful review of the biological testimony. He outlines in detail the life cycle and habits of the various species of fish, the facilities planned for their protection, the possibilities of artificial propagation, etc.

The Examiner's Proposed Order.

After hearing all of the testimony, reviewing the exhibits and considering the briefs of the parties, the Presiding Examiner rendered his recommended decision (Tr. 171-225). It is most unfortunate that its length prohibits its reproduction herein. The issues in this controversy are fully and fairly

stated and the benefits and disadvantages inherent in the applicant's proposal are judiciously weighed. For many compelling reasons, fully set forth in his recommended decision, the Presiding Examiner recommends that the policies established by the Corps of Engineers, the Bureau of Reclamation, the U. S. Fish and Wildlife, the Department of Interior, the President's Water Resources Policy Commission and the State of Washington be followed and that, therefore, the application be denied without prejudice.

The Commission's Order.

In complete disregard of the Examiner's recommended decision, the well considered policies of the other Federal agencies, and of the laws of the State of Washington, the Commission entered its order granting the license (Appx. A).

Issues Involved.

It is the position of the petitioners that the State Sanctuary Act and the city's failure to comply with the other state laws in relation to hydraulics and fish facilities constitute a complete legal bar to the construction of these dams by the city and the issuance of a license for such construction by the Federal Power Commission.

The petitioners also contend that these dams will constitute a complete barrier to migratory fish and will result in the loss of all migratory fish spawning above the dams, as well as substantially diminishing the fish productivity of the river below the dams, and that there is no substantial evidence in the record

to justify a finding that the proposed project "will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of waterpower development, and for other beneficial public uses including recreational purposes;" as required by Section 10(a) of the Federal Power Act.

The petitioners likewise maintain that the Commission's opinion and order granting the license is fatally defective in many other particulars in that it is vague, contradictory, arbitrary, capricious, contains essential findings not supported by substantial evidence, fails to make findings required by the record, involves the sovereign powers of the state, exceeds the power of the commission, and in other respects, all of which are fully set forth in the assignments of error and argument herein.

III. SPECIFICATION OF ERRORS

For the purpose of clarity and because the Order of November 28, 1951, contains sixty-six separate Findings, eight additional Provisions denominated as "Articles" and by reference incorporates its twelve-page Opinion No. 221 into the Findings, we have grouped the Specification of Errors into the three major groups under which these Specifications of Error will be argued. For this reason, also, our Specifications of Error are necessarily more detailed than they otherwise would be. We will number these Specifications of Error consecutively.

As so numbered and grouped, the Findings and Order of the Commission in project number 2016 are erroneous in the following particulars:

Assignments of Error Relating to Jurisdiction and Legal Authority of the Commission to Enter Its Order of November 28, 1951.

1. Finding No. 53 of the Commission to the effect that the City of Tacoma has submitted satisfactory evidence in compliance with the requirements of all applicable laws of the State of Washington insofar as is necessary to effect the purposes of a license is not supported by substantial evidence, and in such Finding the Commission has exceeded the authority conferred upon it by the Federal Power Act and such Finding is arbitrary, capricious and an abuse of discretion, for the construction of these dams is prohibited by the laws of the State of Wash-

ington and will involve the destruction of a valuable state resource.

2. Finding No. 53 by the Commission is contrary to Section 9 (b) and Section 27 of the Federal Power Act in that Applicant has not complied with the Water Code of the State of Washington as required by said sections.

3. The Order of November 28, 1951, and the Order of January 24, 1952, constitute administrative legislation violative of the provisions of the Constitution and laws of the United States; and the imposition thereof constitutes an abdication of the Commission's function as an independent agency of the United States, in contravention of the statutes creating the Commission and granting its authority, and said orders are arbitrary, capricious and an abuse of discretion in that they are not authorized by the Federal Power Act or by any statute or by any delegation of power to the Commission, or otherwise.

4. The Orders of the Commission of November 28, 1951, and January 24, 1952, deprive Petitioners of their property and property rights without due process of law and are in contravention of the Constitution of the United States.

5. The City of Tacoma, as a municipal corporation, has no rights apart from the State of Washington, nor in derogation of state laws, and, therefore, the said City cannot be licensed by the Federal Power Commission to build these dams.

Assignments of Error Predicated Upon the Lack of Substantial Evidence in the Record to Support the Several Basic Findings and Conclusions as Contained in the Order of November 28, 1951.

6. The Commission has exceeded the power conferred upon it, has not fulfilled the obligation imposed upon it by Section 10 (a) of the Federal Power Act, and upon the entire record has acted arbitrarily and capriciously.

7. Error is assigned to Finding No. 59 of the Commission for the reasons hereinafter set forth.

The Commission in such Finding states:

“Under present circumstances and conditions and upon the terms and conditions hereinafter included in the license, the project is best adapted to a comprehensive plan for improving or developing the waterway involved for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water-power development, for the conservation and preservation of fish and wildlife resources, and for other beneficial public uses including recreational purposes.”

Finding No. 59 of the Commission is not supported by substantial evidence, is at complete variance with Findings No. 36, 37, 38 and 39, is arbitrary, capricious and constitutes an unlawful extension of the power conferred upon the Commission by the Federal Power Act and destroys the established comprehensive plan of the Columbia River Basin area and its integrated Lower Columbia River Fishery Plan providing for the maximum development of the Lower Columbia River and tributaries thereof as a

part of the Columbia Basin by written agreement between the states of Washington and Oregon and the United States Fish and Wildlife Service of the Department of the Interior, and which plan excludes the Cowlitz and other rivers entering the Columbia below Bonneville Dam as power producers.

8. Error is assigned to Finding No. 66 of the Order of November 28, 1951, for the reason that the same misinterprets the contents of the report of the Secretary of the Interior and said Finding is not supported by substantial evidence.

9. Error is assigned to the Finding and Conclusion that there now is and will continue to be a severe power shortage in the Pacific Northwest for the next seven to ten years and that a Federal Program of construction will not alleviate that condition, and to each and every reference thereto, because such a Finding and Conclusion is not supported by substantial evidence, but on the contrary, the record affirmatively shows that with median water conditions, there will be no severe power shortage in the Pacific Northwest.

Specifically, we assign as error the following:

Opinion, Page 2, Lines 13 and 14: “ * * * the serious regional power shortage in this area will not be met by the planned Federal Power Construction * * * ”.

Finding No. 16, insofar as it infers that the present estimate of when new generating units

would be placed in operation in the Columbia River Basin will not be fulfilled.

Finding No. 17, Lines 2 to 4: "There will not be firm power available to supply full potential loads until after 1958."

Finding No. 20, indicating a deficiency of dependable capacity of the Northwest region until about 1960, a deficiency in dependable capacity in 1955 of about 430,000 kilowatts, a deficiency of plant capability of as much as 870,000 kilowatts and referring to the effect of an adverse water year prior to the year 1954.

Finding No. 21, "As the Northwest region will continue to be deficient in power supply for approximately the next ten years * * *".

10. Error is assigned to the Finding and Conclusion that construction of the dams as proposed by Applicant will alleviate, or at least materially assist in alleviating, any power shortage, and to each and every reference thereto, because such a Finding and Conclusion is not supported by substantial evidence, but, on the contrary, the record affirmatively shows that these dams could not be constructed in time to have, at the most, but a minor and temporary effect upon the power situation in the Pacific Northwest.

Specifically, we assign as error the following:

Opinion, Page 1, Lines 15 and 16: "Three years would be required after authorization before the proposed plants could be placed in operation."

Opinion, Page 2, Lines 16 and 17: "The installation can be made with a minimum loss of time and with maximum assistance to other power suppliers."

Opinion, Page 12, Line 10: "large power benefits."

Finding No. 22, Lines 4 to 7: "Because of its size, location and characteristics of power output, the project will be an exceptionally valuable addition to the Northwest region's power supply and will relieve to some extent the power shortage which may continue for almost a decade."

Finding No. 23, Lines 8 to 10: "if made within three years would assist greatly in alleviating the power shortage in the Northwest region."

11. Error is assigned to the Finding and Conclusion that there are no alternate sources of power which will supply the energy capable of being produced by the Applicant's project, and to each and every reference thereto, because such Finding and Conclusion is not supported by substantial evidence. The record affirmatively shows that other projects now licensed and ordered can supply the full amount of power to be produced by the Cowlitz dams, and in a shorter period of time; that Applicant could itself construct a steam plant which would supply the same power and have the same benefits by way of diversification as the Cowlitz dams; and that other steam plants could be built which would supply an equal or

greater amount of power than would the Cowlitz dams and which could be constructed in far less time.

Specifically, we assign as error the following:

Finding No. 26: "On the basis of the evidence in this record, none of the hydro-electric projects suggested for construction in lieu of the Cowlitz Project can be constructed as quickly or as economically as the Cowlitz Project."

Finding No. 28: "The only new sources of power supply in substantial quantities that could be constructed by the Applicant and placed on the line by 1954 consist of the proposed Cowlitz Project and new steam electric plants."

The failure of the Commission to make any finding regarding the availability of Federal steam plants as proposed in House Resolution No. 4963.

12. Error is assigned to the Finding and Conclusion that immediate authorization and construction of the project proposed by Applicant is necessary in the interest of National Defense, because the record in no particular supports such a Finding or Conclusion.

Specifically, we assign as error the following:

Opinion, Page 2, Line 12: "The expanding defense requirements, which must be met."

Opinion, Page 12, Line 10: "needed particularly for defense purposes."

Finding No. 13, referring to the advent of the national emergency and implying that the power shortage at the present time is due to that cause.

Finding No. 18, insofar as it refers to the national emergency and the power supply.

Finding No. 20, Line 5, referring to new defense loads.

13. Error is assigned to the Finding and Conclusion that benefits to be derived from the Cowlitz Project outweigh the fishery values and all other considerations because such Finding and Conclusion is not in accord with Section 10 (a) of the Federal Power Act and is not supported by substantial evidence. For purposes of clarity we wish to group the several portions of the Opinion and Findings in five principal divisions.

As so grouped, we assign as error the following:

a. Those portions of the Opinion and Findings referring to flood control and navigation benefits, reference thereto appearing in the Opinion, Page 2, Lines 25 and 26; Opinion, Page 7, Lines 19 and 20; Finding No. 25 and Finding No. 32. The Cowlitz is not a river with a severe history of floods and while any storage dam will have some benefit, from a flood control standpoint, the record does not support a Finding that "large flood control benefits" will result. The Commission itself in Lines 25 and 26 on Page 2 of its Opinion, classifies navigation benefits as incidental, yet later they are grouped with flood control and assigned major importance. There is no evidence in the record that navigation benefits would be of any appreciable value whatsoever.

b. That portion of the Opinion contained in Lines 1 and 2 on Page 7, referring to beneficial reduction of pollution; the record does not support this statement.

c. Those portions of the Opinion and Findings wherein the fisheries and recreational benefits are given but minor value. Specific reference thereto appears in the Opinion, Page 7, Lines 7 to 19; Opinion, Page 8, Lines 1 and 2; and in Findings 43 to 47, inclusive.

d. Finding No. 8, referring to "substantial recreational opportunities" in relation to the two proposed reservoirs.

e. In addition to the foregoing, the Commission, at Page 12 of its Opinion, in Lines 10 to 12, inclusive, concludes the Opinion by balancing what are classified as large power benefits, flood control benefits and navigation benefits, plus incidental recreational and intangible benefits against "some fish loss."

We also assign as error that portion of the Opinion on Page 12, Lines 13 to 15, and reading "or a retention of the stream in its present natural condition until such time in the fairly near future when economic pressures will force its full utilization."

14. The Commission erred in finding that substantial portions of the runs spawning in the river system above the Mayfield dam site can be saved if the dams are constructed, because such Finding is not

supported by substantial evidence in the following particulars:

The statement appearing on Page 10 of the Opinion, to-wit:

“While there are several biological and engineering problems to be solved in connection with the laddering system, the record clearly does not support a rejection of the proposal at this time.”

The first complete paragraph appearing on Page 10 of the Opinion, to-wit:

“Regardless of the details of the methods used, the record shows that adult fish are being passed upstream by high dams successfully and that by trapping and hauling on the Cowlitz fish could be taken past the proposed Cowlitz Dams.”

The statement appearing on Page 11 of the Opinion, to-wit:

“The problem of screening should not be difficult of solution.”

The statement appearing on Page 11, to-wit:

“If the fingerlings can be induced to enter the ports along the upstream face of the Mossyrock Dam the problems of pressure and movement through the dams would be largely engineering.”

To that portion of Finding No. 41 relating to the fingerling device and stating “the record does indicate that with proper testing and experimentation, it should be possible to provide fish handling devices of the type proposed which will prevent undue losses of downstream migrants.”

The Order fails to find that there will be inevitable losses at each of the fish protective devices regardless of their ultimate efficiency and which, in the accumulative, will render the runs above the dam non-productive.

15. Error is assigned to the Finding that the runs spawning in the river below the dams will not be substantially injured (second full paragraph, Page 6 of the Opinion and Finding No. 48), because said Finding is not supported by substantial evidence.

16. Error is assigned to Finding No. 42, insofar as it foresees the possibility of any substantial benefit from the Applicant's proposed conservation practices, facilities and improvements of fish habitat, for the reason that such Finding is not supported by substantial evidence.

17. Finding No. 47 by the Commission, referring to hatcheries, their probable cost of construction, operation and maintenance, and the values arrived at in Findings No. 49, 50 and 51, are not supported by substantial evidence.

Assignments of Error Relating to the Specific Provisions and Articles of the Order of November 28, 1951, insofar as They Do Not Provide Properly for the Effectiveness of the Fish Protective Devices, Provide for Management of a State Resource by a Municipality and Purport to Provide for Further Proceeding Without Opportunity for Petitioners to Be Heard.

18. Articles 30 and 31 and paragraph C of the Order granting the license constitute an unlawful

extension of the authority of the Commission under the Act, are arbitrary, capricious and an abuse of discretion and not in accordance with law in that they provide for inadequate testing and experimentation of fish protective devices, make no adequate provision for the determination of the effectiveness of the same, provide for approval of the fisheries devices and plans by the Commission rather than by the State of Washington as required by state law, do not require the City of Tacoma to prove the effectiveness of the proposed fish protective facilities and provide for the management of state fishery resources by the city under the sole direction of the Commission, to the exclusion of the sovereignty of the State of Washington.

They are also defective in that, when considered in connection with Article 28, the period for tests and experimentations is largely limited to two years. As has been previously pointed out, the effectiveness of many of the untested portions of the fish protective facilities can only be determined after they have been tested over the life cycle of several runs of fish.

19. The Order of November 28, 1951, is arbitrary and capricious and not in accord with the provisions of the Federal Power Act in that it directs issuance of the license and permits commencement of the construction of the dams by Applicant before the effectiveness of the proposed fisheries facilities are determined, and fails to require Applicant to

prove the effectiveness of its proposed fish protective facilities.

20. Articles 30 and 31 of the Order of November 28, 1951, constitute an unlawful extension of the authority of the Commission under the Federal Power Act and are arbitrary, capricious and an abuse of discretion in that they provide for further essential proceeding relating to the fish protective devices without opportunity for Petitioners to be heard, and are indefinite and inadequate in that Petitioners cannot be advised of their rights.

IV. SUMMARY OF ARGUMENT

The Federal Power Commission was without jurisdiction to enter its Order of November 28, 1951, and in so doing has exceeded the authority conferred upon it by the Federal Power Act, for the City of Tacoma has not complied with applicable laws of the State of Washington.

The State Sanctuary Act, which expressly prohibits the building of any dam in excess of 25 feet in height upon the Cowlitz River, is a valid enactment of the State of Washington in the exercise of its police power, as are other state statutes relating to water uses and the fishery resources of the state. Finding No. 53, therefore, as contained in the Order of November 28, 1951, is contrary to Sections 9(b) and 27 of the Federal Power Act and such Finding is arbitrary, capricious and an abuse of discretion by the Commission.

Insofar as the Order of November 28, 1951, permits the building of these dams in derogation of positive state laws, such Order constitutes a denial of due process of law and is in contravention of the Constitution of the United States. In no event can the City of Tacoma as a municipal corporation be licensed by the Federal Power Commission so as to proceed in violation of the laws of the State of Washington.

The basic Findings and Conclusions contained in the Order of November 28, 1951, and which pur-

ported to sustain said Order, are not supported by substantial evidence and the Commission has exceeded the power conferred upon it, has not fulfilled the obligation imposed upon it by Section 10(a) of the Federal Power Act and upon the entire record has acted arbitrarily and capriciously.

Finding No. 59 of the Order of November 28, 1951, is at complete variance with other Findings, operates to destroy the established comprehensive plan of the Lower Columbia River Basin area and its integrated Lower Columbia River Fishery Plan and constitutes an unlawful extension of the power conferred upon the Commission by the Federal Power Act.

The Findings and Conclusions of the Commission relating to the power situation in the Pacific Northwest are not supported by substantial evidence insofar as they indicate that there will be a severe power shortage in that region for the next seven to ten years which will not be alleviated by the federal program of constructions. There is no substantial evidence that the construction of these dams by the City of Tacoma will materially alleviate any power shortage and, in fact, the record indicates that there are alternate sources of power that will supply the same energy capable of being produced by these dams.

The record is devoid of substantial evidence that the project proposed by the City of Tacoma

is in any wise necessary in the interest of national defense.

There is no substantial evidence that the benefits to be derived from these dams outweigh the fisheries values and all other considerations.

There is no substantial evidence in the record to support the several Findings and Conclusions in the Order of November 28, 1951, that the fish runs in the Cowlitz River will not be substantially destroyed by these dams or that any portion thereof can be saved by the city's proposed conservation practices and facilities. The evidence in the record is overwhelmingly contrary to the Commission's Findings in these respects.

The Order of November 28, 1951, does not provide for adequate testing of fish protective devices, nor for determination of their effectiveness prior to their inclusion in the dam structures. The Order provides for the management of a state resource by a municipality, acting under the direction of the Commission, and purports to provide for further essential proceedings without opportunity for Petitioners to be heard.

For the foregoing reasons the Order of the Commission, issued on November 28, 1951, should be set aside and the cause remanded to the Commission for further action consistent with the determination of this Court.

ARGUMENT

We have divided our argument into three principal parts designated A, B and C with sub-heads, each covering a particular phase of the controversy under which parts and sub-heads our specifications of errors are grouped and discussed.

A.

THE FEDERAL POWER COMMISSION WAS WITHOUT JURISDICTION AND LEGAL AUTHORITY TO ENTER ITS ORDER OF NOVEMBER 28, 1951, AND TO ISSUE A LICENSE TO THE CITY OF TACOMA.

Specification of errors 1 through 5 are considered hereunder.

1. The City of Tacoma Has Not Complied with Applicable Laws of the State of Washington and Therefore Cannot Be Issued a License to Build These Proposed Dams Upon the Cowlitz River.

Although the statement of the case relates more in detail the factual background of this appeal, we here point out that:

The large and extensive anadromous fish runs, now present and utilizing the Cowlitz River, are the property of all of the people of the State of Washington and will be substantially and permanently impaired or destroyed by the construction of the contemplated dams. In protection of the fishery resources and water within the State, the legislature of the State of Washington, as a condition precedent to the construction of power dams and the utilizing

of water for power, has required the issuance of a hydraulic permit and that plans and specifications for the proper protection of fish life be approved by the Director of Fisheries and the Director of Game of the State of Washington. None of these steps has been complied with by the City of Tacoma.

In 1949, the State Legislature passed what is known as the "Sanctuary Act," hereinafter set forth, reserving the streams and rivers tributary to the Columbia River and down stream from McNary Dam as an anadromous fish sanctuary for the preservation and development of the food and game resources of the said river system. This statute not only prohibits the building of any dam more than twenty-five feet high on the Cowlitz River, but prohibits the diversion of the waters of said river under certain conditions, and provides that the Director of Fisheries and the Director of Game shall acquire and abate any dam or obstruction, or acquire any water right which may become vested on any stream or river within the aforesaid sanctuary, and which may be in conflict with the provisions of the Sanctuary Act.

In disregard of the State laws, and in effort to circumvent said laws, the City of Tacoma has now procured a license from the Federal Power Commission (Appx. A) to construct the two proposed dams.

The several State statutes which are pertinent are as follows:

The Columbia River Sanctuary Act is contained in Chapter 9, Section 1 of the Laws of 1949. It appears in Volume 5 of R.C.W. as Section 75.20.010, and is as follows:

“All streams and rivers tributary to the Columbia River downstream from McNary Dam are hereby reserved as an anadromous fish sanctuary against undue industrial encroachment for the preservation and development of the food and game fish resources of said river system and to that end there shall not be constructed thereon any dam of a height greater than twenty-five feet that may be located within the migration range of any anadromous fish as jointly determined by the director of fisheries and the director of game, nor shall waters of the Cowlitz River or its tributaries or of the other streams within the sanctuary area be diverted for any purpose other than fisheries in such quantities that will reduce the respective stream flows below the annual average low flow, as delineated in existing or future United States Geological Survey reports: *Provided*, That when the flow of any of the streams referred to in this section is below the annual average, as delineated in existing or future United States Geological Survey reports, water may be diverted for use, subject to legal appropriation, upon the concurrent order of the director of fisheries and director of game.”

The related statutory enactment requiring the acquisition and abatement of dams within the Columbia River Fish Sanctuary is found in Chapter 9, Section 2 of the Laws of 1949, and appears in Volume 5, R.C.W., as Section 75.20.020. It is as follows:

“The director of fisheries and the director of game, shall acquire and abate any dam or other obstruction, or acquire any water right which may become vested on any streams or rivers tributary to the Columbia River downstream from McNary Dam which may be in conflict with the provisions of RCW 75.20.010. Any condemnation action necessary under the provisions of this section shall be instituted under the provisions of chapter 120, Laws of 1947, and in the manner provided for the acquisition of property for public use of the state.”

One of the statutory provisions relating to the necessity of securing a permit from the State Supervisor of Hydraulics, prior to the diversion of water, is found in Chapter 112, Section 46, Laws of 1949, and appears in Volume 5, R.C.W. as Section 75.20.-050. It is as follows:

“It is hereby declared to be the policy of this state that a flow of water sufficient to support game fish and food fish populations be maintained at all times in the streams of this state.

“The supervisor of hydraulics shall give the director of fisheries and the director of game notice of each application for a permit to divert water, or other hydraulic permit of any nature, and the director of fisheries and director of game shall have thirty days after receiving such notice in which to state their objections to the application, and the permit shall not be issued until such thirty days period has elapsed.

“The supervisor of hydraulics may refuse to issue any permit to divert water, or any hydraulic permit of any nature, if, in the opinion of the director of fisheries or director of game, such permit might result in lowering the flow

of water in any stream below the flow necessary to adequately support food fish and game fish populations in the stream.

“The provisions of this section shall in no way affect existing water rights.”

Written approval of the State Directors of Fisheries and Game as to the plans and specifications for the proper protection of the fish life in connection with the construction of hydraulic projects is required by Chapter 112, Section 49, Laws of 1949. It appears in Volume 5, R.C.W., as Section 75.20.100 and is as follows:

“In the event that any person or government agency desires to construct any form of hydraulic project or other project that will use, divert, obstruct, or change the natural flow or bed of any river or stream or that will utilize any of the waters of the state or materials from the stream beds, such person or government agency shall submit to the department of fisheries and the department of game full plans and specifications of the proposed construction or work, complete plans and specifications for the proper protection of fish life in connection therewith, the approximate date when such construction or work is to commence, and shall secure the written approval of the director of fisheries and director of game as to the adequacy of the means outlined for the protection of fish life in connection therewith and as to the propriety of the proposed construction or work and time thereof in relation to fish life, before commencing construction or work thereon. If any person or government agency commences construction on any such works or projects without first providing plans and specifications subject to the approval of the director of fisheries and the director of game for the proper

protection of fish life in connection therewith and without first having obtained written approval of the director of fisheries and the director of game as to the adequacy of such plans and specifications submitted for the protection of fish life, he is guilty of a gross misdemeanor. If any such person or government agency be convicted of violating any of the provisions of this section and continues construction on any such work or projects without fully complying with the provisions hereof, such works or projects are hereby declared a public nuisance and shall be subject to abatement as such.

“Provided, That in case of an emergency arising from weather or stream flow conditions the department of fisheries or department of game, through their authorized representatives, shall issue oral permits to a riparian owner for removing any obstructions or for repairing existing structures without the necessity of submitting prepared plans and specifications.”

In addition to the foregoing statutes, other statutes relating specifically to the appropriation of water, requiring the issuance of a permit, and setting forth the procedure in relation to the same, were set forth in the Laws of 1917 as Chapter 117 and have been amended from time to time. These statutes, together with their present amendments, appear in Volume 6, R.C.W., as Chapter 90.20 and Sections 90.20.010 to 90.24.070, inclusive.

As stated above, the City of Tacoma, under the license in question granted by the Federal Power Commission, claims the right to proceed in violation of all of the above applicable laws of the State of Washington.

2. The Several Statutes of the State of Washington With Which the City of Tacoma Has Not Complied Are Valid Enactments Within the Exclusive Jurisdiction of the State Under Its Police Power.

Historically, the State of Washington has always been most concerned about the preservation of its fish and game, and this is particularly true with respect to the "Columbia salmon run."

As early as the territorial session laws of 1875 we find the passage of the following enactment:

"Be it enacted by the Legislative Assembly of the Territory of Washington:

"Section 1. That it shall be unlawful for any person or persons to use any seine, drag or gill net, or any other apparatus, during the months of March, April and May of each year, within the following limits, to-wit: Commencing at the head of Port Madison Bay in Section 4, township 25 north, range 2 East, following the northern shore of said bay to Agate Passage, thence following the shore line of Bainbridge Island, to Fletcher's Bay, in section 19, township 25, north, range 2 East; also all the shore line of Dogfish Bay. Any person violating the provision of this section may be fined in any sum not exceeding one hundred dollars, by any court having jurisdiction of the offense.

"Section 2. Any person or persons who may build any dam of any kind, or place any obstruction of any kind for any purpose whatever, in any of the rivers of Washington Territory, frequented by salmon for the purpose of spawning, shall construct a suitable fishway by which said fish may reach the water above said dam, or obstruction; and it shall be unlawful for any person or persons to close any river of this Territory by placing across the

same any stakes, seins, drag or gill nets, which may prove an absolute bar to the passage of fish frequenting the same for the purpose of spawning. Any persons violating the provisions of this section may be fined in any sum not exceeding five hundred dollars (\$500) to which may be added imprisonment in the county jail not exceeding one year.

“Section 3. This act to take effect and be in force from and after its passage.” (Approved Nov. 5, 1875.)

November 8th, 1877, the territorial legislature approved another and more extensive act, entitled “An act regulating salmon Fisheries on the waters of the Columbia River.” The preamble of this act clearly shows that the matter of preserving the runs of anadromous fish life was a matter of grave concern at this early date, which preamble reads:

“Whereas, It is well known that the salmon of the Columbia River and tributaries are rapidly diminishing in numbers to the injury of the public, and threatening if not averted to materially prejudice the interests of trade and commerce, therefore:”

This latter act, with minor modifications, was re-enacted by the first state legislature in 1889. At this time was also enacted the first chapter of administrative law as it applied to fisheries in this State (Chapter VIII Commissions, Session Laws 1889-90, page 233) wherein a Fish Commissioner was provided for, to be appointed by the Governor, and to such commissioner was delegated certain express powers, (1) to appoint and remove deputies, (2) to select and purchase suitable land, and build, operate

and manage fish hatcheries thereon, and (3) to examine any complaints and abate nuisances.

By the session laws of 1892, section 8 of the laws of 1890 was amended to provide that the Fish Commissioner would determine and approve any ladder to be built in connection with any dam or obstruction then in existence, or thereafter to be built.

Thus it will be seen that, from the earliest territorial days of Washington, the importance of preserving the run of anadromous fish through legislation preserving inviolate their spawning grounds has been foremost in the minds of our legislators.

The state "*Sanctuary Act*" does not purport to deal in a contradictory manner with anything expressed or reasonably implied in the United States Constitution, or to be found in any lawful enactment of the National Congress in support thereof. At best, the argument seems to be that the state "*Sanctuary Act*" is in derogation of the ruling of the Federal Power Commission, hence that the ruling of the Federal Power Commission must, under the Constitution, be the supreme law of the land. With this we cannot agree, nor, as we will show in later discussion, does the Federal Power Act purport to invade the province of the State of Washington in dealing with the matters covered in the state "*Sanctuary Act*."

Furthermore, as will be discussed at a later point in this brief in some detail, the City of Tacoma has no rights as a person under the Federal constitu-

tion, the City being merely a creature of the State of Washington, a political sub-division in fact of the State, and dependent entirely upon the will of the State legislature for its very existence as well as its rights and powers.

The wording contained in the title of the State "*Sanctuary Act*," in Section 1 thereof, and in the balance of the act as well, clearly establishes that this act is one for the protection of fish life in public waters of the State and the creation of a sanctuary for such fish life.

Such being the purpose, the act is one of, and well within, the police power of the State.

In *State v. Towessnute*, 89 Wash. 479, 154 Pac. 805, it is stated:

" * * * The police power is not confined to subjects of safety, but extends to those of convenience and prosperity. *Chicago, B & Q. R. Co. v. Drainage Com'rs.* 200 U. S. 561, 592. It undoubtedly extends to the conservation of fish. *Smith v. Maryland*, 18 How. 71. Nor is it given up, nor can it be given up, by any legislature to the national government. It must be exerted, to be sure, in such manner as will not infringe other rights which the states, by the constitution, gave up to the central authority; but in controversies on this point the Federal decisions clearly resolve every doubt in favor of the local law. Indeed, even on a subject within the exclusive rights of the general government, the state laws of police will be upheld until the Federal law has actually been extended to that subject. *Sligh v. Kirkwood, supra.*"

State ex rel. Campbell v. Case, 182 Wash. 334, 47 P. (2d) 24, contains the following:

“The supreme court of the United States, in *Geer v. Connecticut*, 161 U. S. 519, 16 S. Ct. 600, quotes with approval, as follows, from *Magner v. People*, 97 Ill. 320, 333:

“ “So far as we are aware, it has never been judicially denied that the government under its police powers may make regulations for the preservation of game and fish, restricting their taking and molestation to certain seasons of the year, although laws to this effect, it is believed, have been in force in many of the older states since the organization of the Federal Government. * * * The ownership being in the people of the state, the repository of the sovereign authority, and no individual having any property rights to be affected, it necessarily results that the legislature, as the representative of the people of the State, may withhold or grant to individuals the right to hunt and kill game or qualify or restrict, as in the opinions of its members will best subserve the public welfare. Stated in other language, to hunt and kill game is a boon or privilege, granted either expressly or implied by the sovereign authority—not a right inherent in each individual, and consequently nothing is taken away from the individual when he is denied the privilege at stated seasons of hunting and killing game. It is, perhaps, accurate to say that the ownership of the sovereign authority is in trust for all the people of the State, and hence by implication it is the duty of the legislature to enact such laws as will best preserve the subject of the trust and secure its beneficial use in the future to the people of the State. But in any view, the question of individual enjoyment is one of public policy and not of private right,” ’ ’ ”

To the same effect are: *State v. Tice*, 69 Wash. 403, 125 Pac. 168; *Cawsey v. Brickey*, 82 Wash. 653, 144 Pac. 938; *Graves v. Dunlap*, 87 Wash. 648, 152 Pac. 532; *Vail v. Seaborg*, 120 Wash. 126, 207 Pac. 15; *McMillan v. Sims*, 129 Wash. 516, 225 Pac. 240; 132 Wash. 265, 231 Pac. 943; *State ex rel. Campbell v. Case*, 182 Wash. 334, 47 P. (2d) 24; *State v. Nelson*, 146 Wash. 17, 261 Pac. 796; *State ex rel. Bacich v. Huse*, 187 Wash. 75, 59 P. (2d) 1101; *Cook v. State*, 192 Wash. 602, 74 P. (2d) 199; *State v. Tulee*, 7 Wn. (2d) 124, 109 P. (2d) 280.

Quotations of similar import to those above set out from the *State v. Towessnute* and *State ex rel. Campbell* cases could be here set forth from almost every one of the cases immediately above mentioned. However, we deem it proper not to belabor the point so conclusively decided.

That the Supreme Court of the United States adheres to the same view as the Washington State Supreme Court is clear from the following:

See *Skiriotes v. Florida*, 313 U. S. 69, 85 L. Ed. 1193; *Lacoste v. Dept. of Conservation of Louisiana*, 263 U. S. 545, 68 L. Ed. 437; *Johnson v. Haydel*, 278 U. S. 16, 73 L. Ed. 155; *Foster Fountain Packing Co. v. Haydel*, 278 U. S. 16, 73 L. Ed. 155, *Lawton v. Steele*, 152 U. S. 133, 38 L. Ed. 385; *Holyoke Water Power Co. v. Lyman*, 82 U. S. 500, 21 L. Ed. 133.

Many other cases from the Supreme Court of the United States of similar holding could be here cited.

Under the decisions it is quite apparent that Chapter 9, Laws of 1949, the state "*Sanctuary Act*," is an act within the police power of the state.

The power to regulate their fisheries was not among the powers delegated by the states to the Federal Government. This authority is reserved for the exclusive use of the states.

This principle was recognized in the early leading case of *McCready v. Virginia*, 94 U. S. 291; 24 L. Ed. 298; where the court said:

"In like manner the state owns the tide-water themselves and the fish in them, so far as they are capable of ownership while running. For this purpose the state represents its people and the sovereignty is that of the people in their united sovereignty. *Martin v. Waddell*, 16 Pet. 410. The title thus held is subject to the paramount right of navigation, the regulation of which with respect to inter-state or foreign commerce, has been granted to the United States. *There has been, however, no such grant of power over the fisheries, they remain exclusively under the control of the state * * **" (Emphasis supplied).

The Washington supreme court followed this rule in *Davis v. Olsen*, 128 Wash. 393, 222 Pac. 891, where it said:

"The Federal Govt. may prohibit or give its assent to the maintenance of fixed structures in navigable waters, but it does not assume to give any right to take fish from even navigable waters against the will of the state."

The rule is likewise set out in 22 Am. Jur., page 695, as follows:

“Within the boundaries of a state, the federal govt. has no authority over fisheries; the fisheries belong to the state in trust for its people. The regulation of fisheries is not a regulation of commerce and is not one of the powers given by the states to the United States.”

It is thus apparent that the State, and the State only, has a right and duty to enact such measures as it deems necessary to protect its fisheries.

In *Holyoke Water Power Co. v. Lyman*, *supra*, the court had occasion to rule upon a statute of the State of Massachusetts very similar in nature to the statute in question here. There, the United States Supreme Court, in an exhaustive review of applicable decisions, affirms the rule that anyone who builds a dam across a stream so as to impede the migration of fish, does so under an implied obligation to maintain adequate fishways unless the charter permitting the construction of the dam specifically exempts them from such an obligation. The court recognizes the vital interest of the State in protecting fish inasmuch as the right to fish is vested in the State in trust for the residents of the State. The obligation to provide fishways does not depend on whether the stream is a navigable or a non-navigable one. It arises according to the court because of the interest of the public in its vital food supply.

The courts hold that such a requirement does not constitute a taking of property without due process of law since the obligation to provide fishways exists at the time of the construction of the dam,

Holyoke Water Power Company v. Lyman, supra, Staughton v. Baker, 4 Mass. 521, and *Parker v. State*, 111 Ill. 581, even in the absence of a statute declaring the obligation of the owner of the dam. It will be noted that the statute was enacted subsequent to the construction of the dam in the *Holyoke Water Power Company* case.

In *Parker v. State, supra*, there is an excellent treatment of the interest of the public in the fishing life, and also an excellent discussion to the effect that the right to maintain the dams without adequate fishways is not a right that can be acquired by prescription against the State. The court quotes with approval from *Staughton v. Baker, supra*, to this effect:

“But the right to build a dam for the use of a mill was under several implied limitations. One was to protect the rights of the private owner by compelling him to make compensation to the owners of the land above—another was to protect the rights of the public to the fishing so that the dam must be constructed that the fish should not be interrupted in their progress up the river to cast their spawn. Therefor every owner of a water mill or dam holds it on the condition, or perhaps under the limitation that a sufficient and reasonable passage way shall be allowed for fish. The limitation being for the benefit of the public is not extinguished by any inattention or neglect in compelling the owner to comply with it, for no laches can be imputed to the government and no time runs so as to bar its rights.”

Thus the validity of R.C.W. 75.20.100 requiring approval of the state directors of fisheries and

game as to plans and specifications for proper protection of fish life in connection with construction of hydraulic projects cannot be questioned, nor can the power and duty of the State to promulgate it be questioned. It is admitted that the City of Tacoma has not complied with its terms.

The only question to be determined in this regard is whether the license granted by the respondent Federal Power Commission excuses the city from compliance with the provisions of R.C.W. 75.20.100.

It has already been determined that the State has authority to pass measures for the conservation of the fisheries within its borders and that the United States is without such jurisdiction. It is therefore obvious that the recitals in the Federal license with relation to fishery devices cannot relieve the city from the obligations of the State law.

Nor can it be said that, because the United States has a qualified jurisdiction over the navigable waters, the states' authority over the fisheries in these waters is in any way diminished. *Davis v. Olsen*, 128 Wash. 393, 222 Pac. 891; *McCready v. Virginia*, 94 U. S. 291; 24 L. Ed. 248. The fact is, as the courts state, the jurisdiction is co-existing, and that of one does not operate to the conclusion of the other.

Conceding, for argument purposes only, that a Federal license is valid, regardless of the state Sanctuary Act, the City of Tacoma would have no right to proceed without compliance with R.C.W.

75.20.100. The laws of the State must govern insofar as fish protective measures are concerned.

The obvious purpose of the Sanctuary Act is to reserve the use of the portions of streams in question and their spawning and feeding areas for anadromous fish. This constitutes a public use since, as we have already seen, the title to the fish is held by the State for the benefit of all of its people.

Thus these sections of State laws amount to a declaration by the State legislature of the use to which the waters in question shall be put and prohibit other uses which would interfere with this use. Section 27, of the Federal Power Act, clearly prohibits the respondent power commission from interfering with such determination of the State. The license therefore exceeds the authority of the Commission and is invalid.

3. The Several Statutes of the State of Washington Are Not Superseded by the Federal Power Act and Such Act Does Not Authorize the Granting of a License to the City of Tacoma.

The *Federal Power Act*, 16 U.S.C.A., 791a to 825r, does not purport to destroy the natural resources of any state or to confer upon the Federal Power Commission such authority; but, on the contrary, the Act expressly withholds such authority from the Commission and unequivocally states the intention of the Congress to be that such resources shall be managed and controlled by the laws of the respective states. The pertinent provisions of the Federal Power Act are:

In Subdivision 7 of Section 3, a Municipality is defined as follows:

“ ‘municipality’ means a city, county, irrigation district, drainage district, or other political subdivision or agency of a State competent under the laws thereof to carry on the business of developing, transmitting, utilizing, or distributing power;” 16 U.S.C.A. 796.

In Subdivision (c) of Section 4; the Commission is directed:

“To cooperate with the executive departments and other agencies of State or National Governments in such investigations; * * *”
16 U.S.C.A. 797.

Subdivision (b) of Section 9 requires that each applicant for a license submit to the Commission:

“Satisfactory evidence that the applicant has complied with the requirements of the laws of the State or States within which the proposed project is to be located with respect to bed and banks and to the appropriation, diversion, and use of water for power purposes and with respect to the right to engage in the business of developing, transmitting, and distributing power, and in any other business necessary to effect the purpose of a license under this Act.”
16 U.S.C.A. 802.

In Section 14, the right of condemnation is expressly preserved in this language:

“ * * * Provided, That the right of the United States or any State or municipality to take over, maintain, and operate any project licensed under this Act at any time by condemnation proceedings upon payment of just compensation is hereby expressly reserved.”
16 U.S.C.A. 807.

In Section 21, the right of condemnation is given to a licensee in this language:

“That when any licensee cannot acquire by contract or pledges an unimproved dam site or the right to use or damage the lands or property of other necessary to the construction, maintenance, or operation of any dam, reservoir, diversion structure, or the works appurtenant or accessory thereto, in conjunction with an improvement which in the judgment of the commission is desirable and justified in the public interest for the purpose of improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, it may acquire the same by the exercise of the right of eminent domain in the district court of the United States for the district in which such land or other property may be located, or in the State courts. The practice and procedure in any action or proceeding for that purpose in the district court of the United States shall conform as nearly as may be with the practice and procedure in similar action or proceeding in the courts of the State where the property is situated:

“PROVIDED, That United States district courts shall only have jurisdiction of cases when the amount claimed by the owner of the property to be condemned exceeds \$3,000.” 16 U.S.C.A. 814.

Section 27 is a saving clause reserving certain rights to the states as follows:

“That nothing herein contained shall be construed as affecting or intending to affect or in any way to interfere with the laws of the respective states relating to the control, appropriation, use, or distribution of water used in irrigation or for municipal or other uses, or any vested right acquired therein.” 16 U.S.C.A. 821.

The foregoing provisions, in most part, appeared in the original *Federal Water Power Act of 1920*, which was amended and supplemented in 1935, becoming Part I of the *Federal Power Act*. The following sections of Part II of said *Federal Power Act* are also indicative of the intention of Congress:

“SECTION 201. (a) It is hereby declared that the business of transmitting and selling electric energy for ultimate distribution to the public is affected with a public interest, and that Federal regulation of matters relating to generation to the extent provided in this Part and the Part next following and of that part of such business which consists of the transmission of electric energy in interstate commerce and the sale of such energy at wholesale in interstate commerce is necessary in the public interest, such federal regulation, however, to extend only to those matters which are not subject to regulation by the States.” 16 U.S.C.A. 824.

“SECTION 202. (a) For the purpose of assuring an abundant supply of electric energy throughout the United States with the greatest possible economy and with regard to the proper utilization and conservation of natural resources, the Commission is empowered and directed to divide the country into regional districts for the voluntary interconnection and coordination of facilities for the generation, transmission, and sale of electric energy, and it may at any time thereafter, upon its own motion or upon application, make such modifications thereof as in its judgment will promote the public interest * * *” 16 U.S.C.A. 824a.

We have shown elsewhere in this brief that the several statutes of the State of Washington relating to uses of water and the protection of its fishery are

clearly within the police power of the state. As a corollary to this, it is unquestioned law that the intention of Congress to exclude the states from the exercise of their police power must be clearly expressed and will not be implied. *International Union U.A.W. v. Wisconsin Employment Retirement Board*, 336 U. S. 245, 69 S. Ct. 516, 93 L. Ed. 651; *Rice v. Santa Fe Elevator Corp.*, 331 U. S. 218, 67 S. Ct. 1146, 91 L. Ed. 1147; *Allen-Bradley Local, etc., v. Wisconsin Employment Retirement Board*, 315 U. S. 740, 62 S. Ct. 82, 86 L. Ed. 1154; *H. P. Welch Co. v. New Hampshire*, 306 U. S. 79, 59 S. Ct. 438, 83 L. Ed. 500; *Carey v. South Dakota*, 250 U. S. 118, 39 S. Ct. 403, 63 L. Ed. 886; *Reid v. Colorado*, 187 U. S. 137, 23 S. Ct. 92, 47 L. Ed. 108.

This principle was recognized and considered in relation to the Federal Power Act by the Court of Appeals for the Second Circuit in 1942 in the case of *Hartford Electric Light Company v. Federal Power Commission*, 131 F. (2d) 953, wherein the court said:

“We are not unmindful of the doctrine of such cases as *Federal Trade Commission v. Bunte Bros. Inc.*, 312 U. S. 349, 61 S. Ct. 580, 582, 85 L. Ed. 881; *Palmer v. Massachusetts* 308 U. S. 79, 83, 84, 60 S. Ct. 34, 84 L. Ed. 93; and *A. A. Kirschbaum v. Walling, administrator*, 316 U. S. 517, 62 S. Ct. 116, 86 L. Ed., i.e., that, having ‘due regard for a proper adjustment of the local and national interests in our federal scheme * * *’, the Court should discountenance ‘inroads by implication in state authority * * *’ and that a Congressional intent to extend federal regulation should not be

assumed to exist unless Congress is 'reasonably explicit' in stating such a purpose."

The very language of the *Federal Power Act* negates any intention of Congress to exclude the states from the exercise of their police power, and, in fact expresses an exactly contrary intention.

Upon three occasions the Supreme Court of the United States has considered the intention of Congress as expressed in the *Federal Power Act* and in respect of the applicability of State laws.

In *Ford and Son v. Little Falls Fibre Co.*, 280 U. S. 369, 74 L. Ed. 489, decided in 1930, the Court said:

"But, in the view we take of the application of the Federal Water Power Act to the present case, it is unnecessary to decide all the issues thus sharply raised. Whether the Commission acted within or without its jurisdiction in granting the license, and even though the rights which respondents here be deemed subordinate to the power of the national government to control navigation, the present legislation does not purport to authorize a licensee of the Commission to impair such rights recognized by State law, without compensation. Even though not immune from such destruction they are, nevertheless, an appropriate subject for legislative protection."

Citing cases, the Court then referred to Sections 10 (c), 27, 21 and 6 of the Act, and continued as follows:

"While these sections are consistent with the recognition that state laws affecting the distribution or use of water in navigable waters

and the rights derived from these laws may be subordinate to the power of the national government to regulate commerce upon them, they, nevertheless, so restrict the operation of the entire Act that the powers conferred by it on the Commission do not extend to the impairment of the operation of those laws or to the extinguishment of rights acquired under them without remuneration * * * ”

One of the most recent decisions interpreting the *Federal Power Act* is the case of *Grand River Dam Authority v. Grand-Hydro*, 335 U. S. 359, 93 L. Ed. 64, cited in 1948, wherein the Court said :

“ * * * As to the question whether the Federal Power Act should be interpreted as actually superseding the state law of condemnation and as restricting the measure of valuation which lawfully may be used by the Court of Oklahoma in a condemnation action for the acquisition of land for power site purposes, there is nothing in the Federal Power Act to indicate that an attempt has been made by Congress to make such a nationwide change in state laws.”

In *First Iowa Hydro-Electric Cooperative v. Federal Power Commission*, 328 U. S. 152, 90 L. Ed. 1143 (1946), and which will be referred to at greater length in this brief, the Supreme Court referred in detail to the several provisions of the *Federal Power Act* and to its legislative history, specifically referring to Section 27 of the Act, as follows :

“As indicated by Representative La Follette, Congress was concerned with overcoming the danger of divided authority so as to bring about the needed development of water power and also with the recognition of the constitu-

tional rights of the states so as to sustain the validity of the Act. The resulting integration of the respective jurisdictions of the state and Federal governments, is illustrated by the careful preservation of the separate interests of the states throughout the Act, without setting up a divided authority over any one subject.

“SECTIONS 27 and 9 are especially significant in this regard. Section 27 expressly ‘saves’ certain state laws relating to property rights as to the use of water, so that these are not superseded by the terms of the Federal Power Act. It provides: ‘Section 27. That nothing herein contained shall be construed as affecting or intending to affect or in any way to interfere with the laws of the respective states relating to the control, appropriation, use, or distribution of water used in irrigation or for municipal or other uses, or any vested right acquired therein.’ 41 Stat. 1077, C. 285, 16 U.S.C.A. 1821, Sec. 821, 5 F.C.A. Title 16, Sec. 821.”

In *United States v. Gerlach Live Stock Co.*, 339 U. S. 725, 70 S. Ct. 955, 94 L. Ed. 1231, decided in July of 1950, there were involved actions against the United States to recover compensation for deprivation of riparian rights by reason of the construction of the Friant Dam in California. One of the issues before the Court involved the ascertainment of the intent of Congress, and the Court referred specifically to a section of the Reclamation Act substantially similar to Section 27 of the Federal Power Act. The language of the Court, including a footnote, is as follows:

“We cannot disagree with claimants’ contention that in undertaking these Friant projects and implementing the work as carried for-

ward by the Reclamation Bureau, Congress proceeded on the basis of full recognition of water rights having valid existence under state law. By its command that the provisions of the reclamation law should govern the construction, operation, and maintenance of the several construction projects, Congress directed the Secretary of the Interior to proceed in conformity with state laws, giving full recognition to every right vested under those laws. *Cf. State of Nebraska v. State of Wyoming*, 295 U. S. 40, 43, 55 S. Ct. 568, 569, 79 L. Ed. 1289; *California Oregon Power Co. v. Beaver Portland Cement Co.*, 295 U. S. 142, 164, 55 S. Ct. 725, 731, 70 L. Ed. 1356; *State of Nebraska v. State of Wyoming*, 325 U. S. 589, 614, 65 S. Ct. 1332, 1348, 89 L. Ed. 1815; *Mason Co. v. Tax Comm'n of State of Washington*, 302 U. S. 186, 58 S. Ct. 233, 82 L. Ed. 187. In this respect Congress' action parallels that in *Ford & Son v. Little Falls Fibre Co.*, 280 U. S. 369, 50 S. Ct. 140, 74 L. Ed. 483."

"The Reclamation Act of 1902, 32 Stat. 388, as amended, 43 U.S.C. Section 371 et seq., 43 U.S.C.A. Section 371 et seq., to which Congress adverted, applies only to the seventeen Western States. Section 8 provides: 'That nothing in this Act shall be construed as affecting or intended to affect or to in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water used in irrigation, or any vested right acquired thereunder, and the Secretary of the Interior. In carrying out the provisions of this Act, shall proceed in conformity with such laws, and nothing herein shall in any way affect any right of any State or of the Federal Government or of any landowner, appropriator, or user of water in, to, or from any interstate stream of the waters thereof * * *' 43 U.S.C.A., Section 383. To the extent that it is applicable this

clearly leaves it to the State to say what rights of an appropriator or riparian owner may subsist along with any federal right."

The Washington State Supreme Court has had occasion to refer to the recognition in the *Federal Power Act* of the independence of the states from the domination or encroachment by the Federal Government. *State ex rel. Washington Water Power Co. v. Superior Court*, 34 Wn. (2d) 196 at page 204, 208 Pac. (2d) 849.

It is anticipated that respondent will rely upon the claimed authority of the *First Iowa Case* and also the case of *U. S. v. Appalachian Electric Light Co.*, 311 U. S. 377, 85 L. Ed. 243, 61 S. Ct. 291. Neither case is in point.

The *First Iowa Hydroelectric Coop. v. Federal Power Comm.*, 328 U. S. 152, 90 L. Ed. 1143, did not decide that the *Federal Power Act*, stemming from the commerce clause of the United States Constitution, could take precedence over the inherent right of a state to preserve and protect its fish in public waters of the state. On the contrary, the Supreme Court of the United States has almost without exception held that, except where repugnant to the U. S. Constitution, the police power of the states has never been conceded to the United States. *Pregg v. Commonwealth of Pennsylvania*, 41 U. S. 539, 10 L. Ed. 1060; *In re Slaughterhouse Cases*, 83 U. S. 36, 21 L. Ed. 394; *Lake Shore & M. S. Ry. Co. v. State of Ohio*, 173 U. S. 285, 43 L. Ed. 702; *Bacon v. Walker*, 204 U. S. 311, 51 L. Ed. 499.

In the *First Iowa Case*, no question of the right of the state to legislate in protection of its natural resources was presented. The Iowa statute endowed the Executive Council of the state with the same power, the same duties and the same sphere of action as Congress has conferred upon the Federal Power Commission. To this extent, and to this extent alone, the Supreme Court held that the licensee did not have to comply with the state laws.

In the *Appalachian Case*, again the question of the preservation of a state resource was not involved. That case merely held that the licensing provisions of the Federal Power Act were applicable, even though the primary purpose of the dam was for the generation of electric power.

In the case at bar the purpose and nature of the several State Statutes are entirely different than any State laws considered in either the *First Iowa Case* or the *Apalachian Case*. The statutes of the State of Washington announce and set forth a State policy in respect of the diversion of water and the protection of its fishery resources.

The question at this point is not whether Congress could so legislate as to preclude the operation and effectiveness of the state laws under consideration, but whether Congress has so legislated. It is our position that Congress has not delegated to the Federal Power Commission authority to override the several State Statutes in question and, hence, permit the City of Tacoma to proceed in derogation of these State laws.

The conclusion above expressed is inescapable upon consideration of the entire Federal Power Act, including the sections previously set forth in this brief, and particularly is this true in relation to Section 27 of said Act.

The Supreme Court of the United States in the *First Iowa Case*, following the quotation set forth earlier herein, referred to said Section 27 in this wording:

“Section 27 thus evidences the recognition of Congress of the need for a specific ‘saving’ clause in the Federal Power Act if the usual rules of supersedure are to be overcome.

“Sections 27 and 9 (b) were both included in the original Federal Water Power Act in 1920 in their present form. The directness and clarity of Section 27 as a ‘saving’ clause and its location near the end of the Act emphasizes the distinction between its purpose and that of Section 9(b), which is included in Section 9 in the early part of the Act, which deals with the marshaling of information for the consideration of a new Federal license. In view of the use by Congress of such an adequate (identical) ‘saving’ clause in Section 27, its failure to use the same language in Section 9(b) is persuasive that Section 9(b) should not be given the same effect as is given to Section 27.

“The effect of Section 27, in protecting state laws from supersedure is limited to laws as to the control, appropriation, use, or distribution of water in irrigation in municipal or other uses of the same nature. It therefore has primary, if not exclusive, reference to such proprietary rights. The phrase ‘any vested right acquired therein’ further emphasizes the application of the section under proprietary rights.

There is nothing in the paragraph to suggest a broader scope unless it be the words 'other uses.' Those words, however, are confined to rights of the same nature as those relating to the use of water in irrigation or for municipal purposes. This was so held in an earlier decision by the district court relating to Section 27 and upholding the constitutionality of the Act, where it was stated that a proper construction of the Act requires that the words 'other uses' shall be construed *ejusdem generis* with the words 'irrigation' and 'municipal'. *Alabama Power Co. v. Gulf Power Co.*, 283 F. 606, 619."

In a footnote to the decision in the *First Iowa Case*, the Supreme Court refers to a Congressional debate upon the inclusion in another act of a section identical with Section 27. This reference, which appears in 51 Congressional Record 13630, is as follows:

Mr. Mondell (Wyoming): "all that is asked of the Federal Government is to give those who seek to develop water power in the public land states an opportunity to use the public lands for that entirely legitimate and useful purpose

"Let us not forget that the primary and essential right upon which any enterprise of this character is based in the public land states is a right received from the people of the state and not the Federal Government. The people of the commonwealth of the West are the owners and proprietors of all the water within their borders, and the only right that any individual can have or secure, at least in the majority of the public land states, is the right to use the water at a certain designated place for specific and useful purpose; and the right continues so long as at that place for that purpose those waters are

beneficially applied. The Federal Government can give no grant of right to build power plants on public lands in the western states that will carry with it the right to divert a drop of water or the use of a drop of water for the turning of a turbine. That right under the laws of the state, recognized by the Federal Constitution and the courts, must be secured from the people through the authority they have provided in the states. That right in all of the states is perpetual so long as the water shall be used at that place for that beneficial purpose."

The *Alabama Power Company Case*, a District Court decision cited by the Supreme Court in the *First Iowa Case*, held that the *Federal Water Power Act* was constitutional and in relation to section 27 stated the principle of *ejusdem generis* to be as follows:

"Now, coming to the consideration of the third objection raised by the respondents, involving the construction of Section 27 of the Act, supra, a proper construction of the Act requires that the words 'other uses' shall be construed *ejusdem generis* with the words 'irrigation' and 'municipal'. The rule is that, when in a statute general words follow a designation of particular subjects or classes, the meaning of the general words will ordinarily be presumed to be restricted by the particular designation. In accordance with this rule, such terms as 'other' 'other things' 'others' or 'any other' when preceded by a specific enumeration, are commonly given a restricted meaning and limited to those things of the same nature as those previously described. 25 R. C. L. Sec. 240, 36 Cyc. 1119-1120."

This rule, however, as has been stated many times by the Supreme Court of the United States and also the Washington State Supreme Court, is but a rule of construction to aid in ascertaining the meaning of a legislative body, and is not for the purpose of subverting such intention when ascertained. *U. S. v. Mescall*, 215 U. S. 26, 30 S. Ct. 19, 54 L. Ed. 77; *Mid-Northern Oil Co. v. Walker*, 268 U. S. 45, 69 L. Ed. 841; *State v. Plastino*, 67 Wash. 374, 121 Pac. 851; *U. S. v. Alpers*, 338 U. S. 680, 94 L. Ed. 457.

Proper statutory construction requires that meaning be given each word and phrase in a legislative enactment. *Alabama Power Co. v. Gulf Power Co.*, 283 F. 606, 619; *Mason v. U. S.*, 260 U. S. 545, 67 L. Ed. 396.

Gooch v. United States, 297 U. S. 124, 80 L. Ed. 522, states:

“The rule of *ejusdem generis*, while firmly established, is only an instrumentality for ascertaining the correct meaning of words when there is uncertainty. Ordinarily, it limits general terms which follow specific ones to matters similar to those specified; but it may not be used to divert the obvious purpose of legislature.”

With these general rules in mind, therefore, let us consider the general language of Section 27 of the Act here in question. It refers to state laws relating to the control, appropriation, use or distribution of water used in irrigation or for municipal or other uses. Obviously, the specific words used do not in any way exhaust the general description since

similar state laws may be invoked for many other purposes of the same general nature or character. This was expressly so held by the District Court in the *Alabama Power Company Case* which was cited with approval by the Supreme Court in the *First Iowa Case*. The *Alabama Power Company Case* refers specifically to other State laws within the same particular subject matter, as follows:

“Section 27, in its specific enumerations does not exhaust the particular subject matter, since state laws may be invoked for the following purposes, to wit, the construction of canals, or other artificial waterways, the construction of a drainage system, either to take fish from the navigable waters of the state, the rights of riparian owners with respect to the formation of ice on streams, the construction of wharfs, piers and docks, the right to shoot wild water fowls from boats under game laws, and perhaps others. These laws of the states are referred to and treated in the 27th volume of R. C. L., page 1061, along with the subjects of irrigation and municipal water supplies.”

Each of the above types or classifications of state laws relates to legislation within the purview and scope of the police powers of the state as do laws relating to “irrigation” and “municipal uses.” Each has to do with subjects, the regulation of which is a fundamental part of the sovereignty of the state and are of the *same nature* within the principle of *ejusdem generis*.

For example, the phrase “irrigation purposes” has been held by the Washington Supreme Court to be synonymous with, or at least included within, the

phrase "agricultural purposes." *State v. Tiffany*, 44 Wash. 602, 87 Pac. 932. "Municipal uses" have been held necessarily to include "agricultural purposes." *City and County of Denver v. Sheriff*, Colo. (1939), 96 Pac. (2d) 836. Each word, therefore, and certainly the word "irrigation," relates to the control, appropriation, use or distribution of water for the production of food. The use of the Cowlitz River for fish propagation is as much a use to produce a food crop as irrigation would be. A large share of the value of the State's fishery resources lies in their food value and it is impossible to distinguish in principle between the destruction of agricultural crops and the destruction of food crops. In point of fact, both the Washington Supreme Court and the Supreme Court of the United States have defined the police power of the State to regulate and control its fishery resources as within the sovereign power of the state to promote the general welfare by conserving and increasing useful and valuable food supplies. *Vail v. Seaborg*, 120 Wash. 126, 207 Pac. 15; *State v. Van Vlack*, 101 Wash. 503, 172 Pac. 563; *Silz v. Hesterberg*, 211 U. S. 31, 53 L. Ed. 75; *Geer v. Connecticut*, 161 U. S. 519, 40 L. Ed. 793; *Lawton v. Steele*, 152 U. S. 133, 38 L. Ed. 385. See also the case of *Anthony v. Veatch*, a decision of the Supreme Court in Oregon, decided in 1950, 220 Pac. (2d) 493.

Certainly, upon principle and upon authority, the statutes of the State of Washington, set forth earlier in this brief, are laws relating to the control,

appropriation, use or distribution of water within the phrase "other uses" as contained in Section 27 of the Federal Power Act and in complete accord with the principle of *ejusdem generis*.

Furthermore, both the State Sanctuary Act, R.C.W. 75.20.010, and the State Water Code, R.C.W. 90.20.010 to 90.24.070, relate or refer to dams for power purposes. It is too well settled to require extensive citation of authority that the construction of power dams is a proper municipal purpose or power. *The City of Tacoma v. Nisqually Power Company*, 57 Wash. 420, 107 Pac. 199.

These State laws, therefore, relate directly and unequivocally to the control, appropriation, use or distribution of water used for municipal uses. Hence, they are squarely within the protection of Section 27 of the *Federal Power Act*.

Finally, an analysis of the *Federal Power Act* as a whole, and the Sections earlier set forth in particular, indicates clearly that Congress intended to accord to the several states the protection guaranteed them by the Fifth Amendment to the Constitution of the United States.

We have previously shown that the ownership of the fish within the waters of the State is in the people of the State. Likewise, the beds and banks of the Cowlitz River, including the spawning beds of the salmon within the river and its tributaries, are the property of the State. *First Iowa Case, supra, United States v. Cress*, 243 U. S. 316, 61 L. Ed. 746.

Respondent has not shown, nor could it show, that there are no other sources of power which would supply that expected to be produced by the Cowlitz dams. Hence, these particular dams are not even claimed to be essential to the well being of the City of Tacoma. Contrary to the express mandate of the people of the State of Washington, acting through their legislature, the City of Tacoma, acting under purported license of the Federal Power Commission, intends to proceed toward the destruction of the Cowlitz fishery and to take for its own use the property of the State. This certainly amounts to a gross discrimination against the people of the State and such has been held to constitute a deprivation of property without due process, contrary to the Fifth Amendment. *Steward Machine Company v. Davis*, 301 U. S. 548, 81 L. Ed. 1279; *Currin v. Wallace*, 306 U. S. 1, 83 L. Ed. 441; *U. S. v. Petrillo*, 68 F. Supp. 845 (reversed on other grounds, 332 U. S. 1, 91 L. Ed. 1877).

The *Federal Power Act*, therefore, would be contrary to the Fifth Amendment if the Court should conclude that it authorized the City of Tacoma to destroy and take the property of the people of the State of Washington in derogation of the laws of the State and without compensation therefor.

On the other hand, a cardinal principle of statutory construction requires, if possible, a construction in accord with the constitutionality of the statute in question, *Casco Co. v. P. U. D. No. 1*, 37 Wn. (2d)

777, 226 P. (2d) 235. It is logical, therefore, to conclude that Congress intended to preserve and protect those rights included within the protection of the Fifth Amendment. This is in keeping with the language of the entire Act and particularly Sections 21 and 27, previously set forth.

Aside from what rights Section 21 (providing for condemnation) provides in respect of the intent of Congress, it specifically accords to a licensee the right of condemnation. Respondent has not shown, nor could it show, that the City of Tacoma has availed itself of that right or acquired by condemnation any right to take or destroy the property of the State of Washington and its people. In and of itself this constitutes a complete bar to the right of the City of Tacoma to proceed further in the construction of these dams under any license of the Federal Power Commission.

The Court's attention is called to a very recent decision of the U. S. Court of Appeals for the District of Columbia handed down December 31, 1952. The case is entitled *Niagara-Mohawk Power Corporation v. Federal Power Commission*, and the decision has not yet appeared in the Reports. It is Docket No. 10,862, decided December 31, 1952. The decision held that State water-use rights remain valid and compensable when encompassed in a Federal licensed hydro-electric project, and that the Federal license is not the source of water rights, but a permission to exercise them pursuant to State law. The Court of

Appeals did not deny the long accepted proposition that Congress may exercise absolute power over the improvement of navigable streams. It held, however, that such authority was not necessarily exercised in the *Federal Power Act*.

In the leaflet-form copy of the opinion issued by the Court of Appeals, D. C. Circuit, in the *Niagara-Mohawk Power Corporation v. Federal Power Commission* case, the court stated, at page 29:

“Moreover, the legislative history of the Act shows that Congress was taking care not to impinge upon the rights of states nor upon their rules of property concerning diversions of water.”

At page 32, the said Court stated:

“An applicant for a license must show the Commission he has under state law the right to divert the water for the use of which he desires a license. Unless he has that right, we think the Commission cannot lawfully issue a license to him.”

At page 33, the said Court stated further:

“We hold that the Pettebone-Cataract and International Paper water rights are valid usufructuary property rights under the law of New York; * * * that the Water Power Act of 1920 did not extinguish the rights but simply forbade their use without a federal license; *that such a license is not the source of water rights but a permission to exercise usufructuary rights acquired pursuant to State law; * * **” (Emphasis supplied).

4. **The City of Tacoma as a Municipal Corporation Has No Rights Apart From the State of Washington, Nor in Derogation of State Laws, and Therefore the Said City**

Cannot Be Licensed by the Federal Power Commission to Build These Dams.

This portion of the brief will be devoted solely to the proposition of whether a municipal corporation of the State of Washington is enabled to proceed under Federal authority in derogation of the state Sanctuary Act (Chapter 9, Laws of 1949) (Rem. Rev. Stat. 1949 Supp., Sec. 5944-2 *et seq.*) (R.C.W. 75.20.010 *et seq.*).

The State of Washington, under its police power, having enacted said Chapter 9, Laws of 1949, how can the Federal Power Commission authorize the City of Tacoma, a municipal corporation of this State, to proceed with construction of the dams in derogation of its state laws?

A municipal corporation is a mere creature of the State. *State v. Aberdeen*, 34 Wash. 61, 74 Pac. 1022; *Batchelor v. Madison Park Corporation*, 25 Wn. (2d) 907, 172 P. (2d) 268; *Hunter v. Pittsburg*, 207 U. S. 161, 52 L. Ed. 151; *Worcester v. Worcester Consolidated Street Ry. Co.*, 196 U. S. 539, 49 L. Ed. 591.

Municipal powers once delegated to the municipality by the State may be taken away from the municipality by the State. *Farwell v. City of Seattle*, 43 Wash. 141, 86 Pac. 217; *State ex rel. McMannis v. Superior Court for Whitman County*, 92 Wash. 360, 159 Pac. 383; *Pacific First Federal Svcs. & Loan Assn. v. Pierce County*, 27 Wn. (2d) 347, 178 P. (2d) 351; *Christie v. The Port of Olympia*, 27 Wn. (2d)

534, 179 P. (2d) 294; *Wheeler School District of Grant Co. v. Hawley*, 18 Wn. (2d) 37, 137 P. (2d) 1010; *Union High School District No. 1, Skagit County v. Taxpayers of Union High School Dist.*, 26 Wn. (2d) 1, 172 P. (2d) 591.

Since a fundamental rule of statutory construction is to ascertain and give effect to the legislative intent, Chapter 9, Laws of 1949, cannot be read in any other light than to prohibit the building of dams in excess of 25 feet in height within the sanctuary. If the City of Tacoma ever had the power to proceed with the construction of dams on public waters of Washington to the destruction and elimination of fish life therein, that power has now been taken away by the State legislature, at least within the sanctuary outlined in the state Sanctuary Act.

It will be contended that regardless of state law the City of Tacoma may proceed under authority of the Federal statutes and constitution. In other words, although said city is a creature of Washington State, it may flaunt the authority of its sovereign to perpetuate its will under license of Federal authority, which brings us to the nub of this portion of the argument.

It may at this point be first helpful to observe some rules of almost universal acceptance which apply to municipal corporations.

1. Its sources of power include: (a) the State constitution; (b) the statutes of the State; (c) the charter; and (d) in some states the inherent right

of self government with respect to certain municipal matters. McQuillin—Municipal Corporations (1949), Vol. 2, page 578, Sec. 10.03. It is to be noted that Federal authority, constitution or otherwise, is not a source of power for a municipal corporation.

2. It is a general rule that municipal ordinances must be in harmony with State law, and where there is conflict the State statute prevails. McQuillin—Municipal Corporations (1949), Vol. 5, page 96, Sec. 15.20. See also same work, Vol. 2, page 592 *et seq.*, Sec. 10.09.

3. A general statute relating to matters of statewide concern ordinarily repeals, and is construed to repeal, previously existing ordinances in conflict with it, and ordinances enacted must not conflict with State law. McQuillin—Municipal Corporations (1949), Vol. 6, pages 246 *et seq.*, Sec. 21.34. See also same volume, page 391, Sec. 23.07.

In *Mosebar v. Moore*, 141 Washington Decisions 203 (September 25, 1952), the Supreme Court of the State of Washington said:

“Appellant contends, that if the 1951 act is given this construction, it violates Art. XI, Sec. 10 of the state constitution, because it constitutes an improper attempt on the part of the legislature to interfere in the local affairs of a municipality acting under its municipal charter.

“It is true that such charters
‘ * * * become the organic law thereof, and supersede any existing charter including amendments thereto, and all *special* laws inconsistent with such charter.’ Washington

constitution—Art. XI, Sec. 10 (Italics ours).

“This constitutional provision, while providing for home rule within a city or town as to those matters which are local in character, does not give to the municipality, under its charter, the right to legislate exclusively on all matters which touch its existence. By authorizing municipal charters, the constitution does not take from the legislature the right to determine what shall be the law of the state, both inside and outside of municipalities.

“It is equally true that

‘ * * * cities or towns heretofore or hereafter organized, and all charters thereof framed or adopted by authority of this Constitution shall be subject to, and controlled by *general laws*.’ Washington constitution—Art. XI, Sec. 10 (Italics ours).

“The law here in question (R.C.W. 35.21.-200), as we have pointed out, is a general law and applies equally to all persons within a given class. It affects not only the civil service employees of Yakima but also the civil service employees of every other city or municipal corporation within the state. It follows then that Art. XI, Sec. 10 of the constitution, is not violated by the statute, for city charters are specifically made subject to and controlled by such general laws.”

The Federal Constitution has seldom been held to protect municipal corporations from legislative interference. It has been said that a municipal corporation has no privileges or immunities under the Federal Constitution which it may invoke against State legislation affecting it. McQuillin—Municipal Corporations (1949) Vol. 2, page 37, Sec. 4.17.

In *Williams v. Mayor of Baltimore*, 289 U. S. 36, 77 L. Ed. 1015, the Supreme Court of the United States says:

“A municipal corporation, created by the state for the better ordering of government, has no privileges or immunities under the federal constitution which it may invoke in opposition to the will of its creator. *Trenton v. New Jersey*, 262 U. S. 182; *Newark v. New Jersey*, 262 U. S. 192; *Worcester v. Worcester Consolidated Street Ry. Co.*, 196 U. S. 539; *Pawhuska v. Pawhuska Oil Co.*, 250 U. S. 394; *Risty v. Chicago R. I. & P. Ry. Co.*, 270 U. S. 378, 390; *Railroad Commission v. Los Angeles Ry. Corp.*, 280 U. S. 145, 156.”

In the *Trenton v. New Jersey* case above cited the Supreme Court stated:

“The power of the State, unrestrained by the contract clause of the Fourteenth Amendment, over the rights and property of cities held and used ‘for governmental purposes’ cannot be questioned * * * *Hunter v. Pittsburg*, 207 U. S. 161, 52 L. Ed. 151.”

It is clearly pointed out in 36 Michigan Law Review 385 that a municipal corporation has no rights under the Federal constitution, regardless of whether its governmental or proprietary rights are involved under the State statute in question. This article contains a complete and exhaustive analysis of the various cases which we will not here reiterate for sake of brevity.

We quote from a portion of the concluding paragraph of said article at page 396 of said 36 Michigan Law Review:

“These recent decisions and opinions of the court seem to constitute adequate ground for discarding any lingering doubts, created by dicta in earlier cases, regarding the soundness of an assertion to the effect that the contract, due process and equal protection clauses of the national constitution afford no protection whatever to municipal corporations in their own right, as against the power of the states to control them. * * *”

The question is annotated at 116 A. L. R. 1037, *et seq.*, at the end of which annotation it is pointed out that the constitutionality of a legislative act can be attacked only by one who has an interest in the question and whose rights are affected thereby. It logically follows that the City of Tacoma has no rights apart from the State of Washington and, regardless of the constitutionality of the state law, if the building of the dams is prohibited thereby, the said city cannot proceed under license of the Federal Power Commission, nor be so licensed by said Commission.

We submit that the applicable statutes of Washington above set out are constitutional, they are in protection and preservation of the fishery resource of the State and all of its people under the sovereign police power. These State laws are not superseded by the Federal Power Act and the Federal Power Commission is without jurisdiction or legal authority to license the City of Tacoma to proceed in violation of the laws of the State of Washington.

B.

THERE IS NO SUBSTANTIAL EVIDENCE IN THE RECORD TO SUPPORT THE BASIC FINDINGS AND CONCLUSIONS IN THE ORDER OF NOVEMBER 28, 1951.

We respectfully submit that the matters set forth in the first subdivision of this brief and incorporating specifications of error 1 to 5, inclusive, are determinative of all matters involved in this petition for review. In addition, however, the basic findings and conclusions embodied in the Order of November 28, 1951, are not supported by substantial evidence and this is a proper subject of review.

Section 313 (b) of the Federal Power Act provides, “ * * * The Finding of the Commission as to the facts, if supported by substantial evidence, shall be conclusive.”

It is too well established to require lengthy citations of authorities that the Court of Appeals will review an order of the Federal Power Commission on a challenge that it is not supported by substantial evidence. This Court expressly so held in the case of *Pacific Power and Light Company v. Federal Power Commission*, 98 F. (2d) 835; affirmed upon certiorari being granted by the Supreme Court of the United States, 307 U. S. 156, 83 L. Ed. 1180; and upon remand to this Court, the order of the Federal Power Commission was set aside, 111 F. (2d) 1014.

See also the following cases in this Court, where review was had, even though the Order was ulti-

mately affirmed, *North West Electric Company v. Federal Power Commission*, 125 F. (2d) 882, *Montana Power Company v. Federal Power Commission*, 112 F. (2d) 371.

It is well settled that the Court will examine the findings and evidence in such a review proceeding. *Carolina Aluminum Company v. Federal Power Commission*, 97 F. (2d) 435.

Specification of errors 6 through 17 are considered hereunder.

1. The Commission Has Exceeded the Power Conferred Upon It and Has Not Fulfilled the Obligation Imposed Upon It by Section 10(a) of the Federal Power Act, and Upon the Entire Record Has Acted Arbitrarily and Capriciously.

The Commission in the making of Finding No. 59 apparently took the view that, since the United States Army Engineers did not propose Federal development of the Cowlitz River, the river was not, in fact, included as a part of the Lower Columbia River Fisheries Plan. The Commission states in effect that there has never been any determination as to whether the Cowlitz River is a part of the said plan (see pages 4 and 5 of the Commission's Opinion, Appx. A), principally because the City of Tacoma had never made any application to develop the Cowlitz River for power prior to the formulation of the plan.

We submit as obvious that, in the making of a comprehensive plan for the development of waterways for all available public use, including power, commercial fishing and recreation, the identity of

the prospective developer is of no consequence. In other words, if such a plan is to be formulated and adopted, it makes no difference whatsoever whether Federal agencies, State agencies or private interests are involved as potential developers of the waterways.

The only evidence produced in the record in this case concerning the comprehensive plan for the development of the waterways in the Columbia Basin area was that of these petitioners, as intervenors in such proceedings.

The record as so made conclusively shows that the Columbia River and its tributaries has been extensively studied and analyzed by the United States Corps of Army Engineers, United States Bureau of Reclamation, Bonneville Power Administration and agencies of the several Columbia Basin states. See H. Doc. 531, 81st Cong. 2nd Sess. The Columbia was also the subject of consideration in the public report of the President's Water Resources Policy Commission (Vol. 2, Ten Rivers in America's Future). (Tr. 189-195.)

The record shows that all Federal and all State agencies have approved and adopted the Lower Columbia River Fisheries Plan as an integral part of the comprehensive plan for the development of the waterways involved (Tr. 104-106). Simply stated, the plans are for the maximum utilization of the Lower Columbia and tributaries entering the river below Bonneville for the management and

development of migratory fish runs primarily, and the utilization of the portions of the Columbia above Bonneville primarily for power. (See "Transaction of the American Fisheries Society, 1950 Reprint.")

The Cowlitz is one of the major salmon producing tributaries of the entire Columbia River. It is also the only major river which has retained most of its stream system unobstructed by manmade waterway developments. See Review Report on Columbia River and Tributaries, H. Doc. 531, 81st Cong. 2nd Sess., Appendix P. Further, the Cowlitz is the most important salmon producing tributary entering the Columbia below Bonneville Dam. Mr. Barnaby of the United States Fish and Wildlife Service testified that the Cowlitz was the "keystone" of the Lower Columbia River Fisheries Plan, and that in his opinion the success of the plan was dependent upon maintaining the Cowlitz in at least its present level of fish productivity. The necessity of preservation of the Cowlitz for fish runs will constantly be increased many times as the Columbia above Bonneville and the Snake River entering the Columbia above Bonneville are further utilized for power in accordance with the over-all comprehensive plan for the Columbia Basin area.

The Review Report on Columbia River and Tributaries, containing the Lower Columbia River Fisheries Plan, was approved and confirmed by this Federal Power Commission, and Congress, although it has not officially approved the entire plan because

of pending S. 1645, a bill to establish a Columbia Valley Authority, has appropriated \$1,000,000 in 1949, \$1,500,000 in 1950, and \$2,500,000 in 1951, to the Department of Interior, to be expended by it with the States of Washington and Oregon in furtherance of the plan. A portion of the above mentioned appropriations has been expended upon the Cowlitz and other substantial portions of said appropriations have been earmarked for that river. Certainly this action on the part of Congress constitutes its approval of the Lower Columbia River Fisheries Plan as it relates to the Cowlitz, even though Congress has not officially approved the entire over-all comprehensive plan for the Basin.

The two States of Washington and Oregon have entered into a written agreement with the United States Fish and Wildlife Service whereby they, together with the said Service, will effect maximum development of the Lower Columbia and the tributaries thereof entering the river below Bonneville as a part of the comprehensive plan for the development of the waterways of the Basin. In furtherance of the plan, the State of Washington enacted into law the act known as the Lower Columbia River Sanctuary Act, Section 1, *et seq.*, Chapter 9, Laws of 1949, (Rem. Rev. Stat. 5944-2, 1949 Supp.).

In the making of its Finding No. 59, what comprehensive plan for the development of the waterways in the Columbia River Basin, referred to in said Finding, could have been in the minds of the

Commission? There is no evidence of any plan other than the comprehensive plan, including the Lower Columbia River Fisheries Plan, in the record. The Commission did not offer any plan of its own in its Findings, yet that is the ultimate effect of its decision, even though the Commission admitted that it did not have the necessary staff for making an independent evaluation of the water uses other than power when it approved the aforesaid Review Report (See Commission's Opinion Appx. A). The Commission staff offered no evidence in this record of any plan evolved by it.

Finding No. 59 is not supported by substantial evidence, and the Commission, therefore, has not complied with the mandate of Section 10 (a) of the Federal Power Act, which requires that the project will be best adapted to a comprehensive plan for improving or developing waterways for improvement of water power development and other beneficial public uses, including recreational purposes.

- 2. There Is No Substantial Evidence to Support the Several Findings and Conclusions Contained in the Opinion and Order of November 28, 1951 That There Is and Will Be a Severe Power Shortage in the Pacific Northwest for the Next Seven to Ten Years; That a Federal Program of Construction Will Not Alleviate That Condition; That Construction of the Dams as Proposed by the City of Tacoma Will Alleviate Any Power Shortage; That There Are Not Alternate Sources of Power That Will Supply the Same Energy Capable of Being Produced by These Proposed Dams; That the Project Proposed by the City Is Necessary in the Interest of National Defense; and That the Benefits to Be Derived**

From These Dams Outweigh the Fisheries Values and All Other Considerations.

The fact that the existing power needs in the Pacific Northwest will not permit the immediate addition of large new loads does not support a Finding or Conclusion that there is a present severe power shortage.

Applicant, throughout its brief and argument, has placed an entirely unwarranted emphasis upon references in the record to a "critical water year," and by so doing has created a completely erroneous impression of the present power situation in the Pacific Northwest. This basic error is the foundation for all later Findings and Conclusions by the Commission.

Following the basic premise that there presently exists a severe power shortage in the Pacific Northwest, the Opinion and Findings of the Commission project that condition through the next seven to ten years. This second conclusion is equally without support in the record, notwithstanding some of the specific language contained in the Opinion and Findings is in accord with some testimony in the record.

The record contains various estimates of the relationship between firm power and potential requirements, ranging from those of the witness Robbins, who testified for Petitioners, as Interveners in such proceedings, to the estimate prepared by the Commission staff.

The record shows that there will be ample firm power with median water conditions, and considering all potential requirements of the entire region, by some time between 1954 and 1957. The various estimates as contained in the record are as follows:

Professor Robbins, 1954 to 1957 (Ex. 26)

Mr. McManus (Applicant's witness), 1955 to 1956 (Ex. 64 b.)

Applicant, 1956 to 1957 (Ex. 10—Plate 19)

F. P. C. Report on Jodsa Bill, 1957

The Commission staff estimates that there will not be power available until 1960, using as its criteria minimum water conditions.

Also, there is in the record, as Exhibit 23, the Bonneville Power Administration Advance Program for Defense 1950, which indicates in Charts 13 and 14 that power capabilities will exceed the potential requirements in this region in the event of a median water year by 1953 to 1954. This same report estimates that, in the event of a minimum water year, power capabilities will exceed potential requirements by 1957 to 1958 (Ex. 23, Charts 13 and 14).

It is possible, of course, to create new demands to the point where every river and stream and every other resource must be utilized. That point has not been reached, however, and certainly will not be reached during any period now foreseeable.

Throughout the entire record, in its briefs and in its oral argument, Applicant has sought to show that the proposed projects would be of material assis-

tance to the power situation in the Pacific Northwest. The record itself completely refutes this position.

Applicant's witnesses testified that the proposed plants could be placed in operation three years after authorization, and the Commission at Page 1 of its Opinion so found. Actually, however, this Finding and statement by the Commission conflicts with the very Order itself, and is contrary to the record, for Articles 28 and 30 of the Commission's Order indicate clearly that this is a five-year project. The Licensee is given two years to commence construction of the project, and three years thereafter to complete it.

Obviously, the two-year period is for the studies, tests and experiments relating to permanent fish ladders, fish traps or other fish handling devices, the submission of plans therefor, and the obtaining of Commission approval. As shown by Plates 31 and 32 of Exhibit 11, the installation and construction of fish ladders at Mossyrock would commence two months after the letting of the first contract, and at Mayfield four months after the letting of the first contract. This cannot be done until Article 30 is complied with and, hence, a five-year construction period is a distinct probability. We must assume that the Commission has directed Applicant to proceed as expeditiously as possible.

The project, therefore, could not be completed until at least 1957, and by that time the Federal Program will largely have met all potential power needs

in the Pacific Northwest. At the most, benefit to be derived from the Cowlitz dams would be of assistance for only a very short time.

On April 25, 1951, the Commission issued a license for the Yale Project which will have an initial installed capacity of 100,000 kilowatts, and provisions are made for another 100,000 kilowatts which the Commission can order to be installed concurrently with the first 100,000 kilowatts, if it so desires. (Tr. 111.)

This project is upon the Lewis River in the State of Washington, a river which is already obstructed by a high dam and to which there is no opposition from Interveners, Petitioners in these proceedings, legal or otherwise.

On May 2, 1951, the Commission ordered the installation of six 25,000 k.v.a. generating units at the Rock Island Project, which will produce approximately 135,000 kilowatts. (Tr. 111.)

These two projects, totaling a possible 335,000 kilowatts, can be constructed as quickly or more quickly than could the Cowlitz project and Finding No. 26 omits any reference thereto.

We have previously shown that there is no possibility of the Cowlitz Project being in operation by 1954 and, in fact, it will likely be 1958 to 1959 before power can be produced from that project. Hence, Finding 28 is in error.

The Findings of the Commission also omit any reference to proposed steam plants to be built by

other than Applicant. On October 9, 1951, the House of Representatives' Committee on Public Works reported favorably upon House Resolution No. 4963, which resolution proposes the construction, operation and maintenance of eight fuel fired electric generating plants by the Bonneville Power Administration in the Pacific Northwest. These plants would have a total capacity of 400,000 kilowatts (Report 1114, p. 1). The Secretary of Interior has estimated that these steam plants can be constructed and brought into operation at least two years earlier than any authorized hydro-electric plant, and that the gas turbine plants can be operated nine months earlier than the steam plants (Report 1114, p. 10).

The Court will, we believe, take judicial notice of this report of the Committee of Public Works report No. 1114, and the entire report is commended. Aside from the obvious facts appearing in the report, we believe it to be interesting on two additional grounds:

First, it is obvious from the report that the principal objection on the part of the minority members of the Committee on Public Works related to whether power in the Pacific Northwest should be furnished by the Federal Government or by private and local agencies (Report 1114, p. 17). We have no intention of becoming involved in that controversy, but, certainly, the protection of a vital state resource, as important to the economy of the State of Washington as its fishery industry, is of equal importance.

In passing, it should be noted that House Resolution No. 4963 has the support of the Department of Interior and the Federal Power Commission.

“National Defense” is a most difficult argument to oppose. Were the record to show, or the fact to be, that immediate construction of these two dams were essential to the defense of the United States, Interveners (Petitioners in the proceedings) would not be here opposing this application. But, such is not the case.

Certainly there is a national emergency, and certainly every one of us desires to do his part toward that emergency; but this is a far cry from saying that these dams are immediately necessary for national defense. There is nothing in the record that supports that conclusion. There is nothing in the record but unsupported, vague generalizations concerning national defense. The exact or even the probable course of the Korean conflict or the world conflict is unknown to all of us. If power is urgently needed, it can be supplied from other sources which will not damage a state resource. Upon this record, to state (as Applicant does and as the Commission does) that the construction of these dams (which could only be completed in from five to seven years) is immediately necessary for national defense, is to go beyond the record and to appeal not to facts, but to blind prejudice.

It would be far wiser to continue, if necessary, carrying some loads upon an interruptible basis,

(actual interruption is only for a few days or a few weeks at any one time) or to restrict the amount of power used by theater marquees, outdoor advertising, neon signs, taverns, hot dog stands, night football games, etc., than to destroy an essential industry in the name of "National Defense." We refer the Court to the Recommended Decision of the Presiding Examiner where he discusses the subject of national defense at pages 109 to 112, inclusive, of the transcript.

Section 10-a of the Federal Power Act provides that the projects shall be such as in the judgment of the Commission will be best adapted to a comprehensive plan for improving or developing a water way for the use or benefit of (1) Inter-state commerce; (2) Water Power development; (3) *Other beneficial uses, including recreational purposes.* (Italics ours.)

This, the Commission has not done, but, on the contrary, has measured the value of the power to be produced by the Cowlitz Project as the net value in excess of the cost of producing such power. Actually, the figure thus arrived at, to-wit, \$1,700,000 per year, is the difference in cost found by the staff of producing power by the Cowlitz Project or by steam plants, which could be built by Applicant. We believe this figure to be too high, but, in any event, it is still not a proper criteria. Whether we consider this \$1,700,000 as the sole benefit to be derived by Applicant or whether we look elsewhere in the record

to ascertain the net profit which Applicant will derive from the operation of these dams, that profit is, when considered as such, solely a gain to the City of Tacoma, while the destruction of the fishery resources means a loss to the entire State of Washington.

The Commission has entirely ignored the testimony of the only witnesses who testified specifically to the fisheries and recreational benefits. (Tr. 2854, Ex. 25, Ex. 30.)

In point of fact, the entire basis used by the Commission for the comparison of values is erroneous. As we have previously pointed out, this same amount of power can be produced through steam plants, whether built by Applicant, or by others; the Yale and Rock Island projects will supply substantially an equivalent amount of power; and the Federal hydro program will supply all potential needs. There can be no question but that each of these sources is economically feasible, and the cost to Applicant, therefore, is not material.

We are faced with the destruction of a state resource, and the true criteria for the comparison of values is the value of the fishery resource as compared with the value, to the region, of the power to be produced by this project. Applicant predicates its entire program upon the premise that the power to be produced by these dams can be marketed at six mills (Ex. 12, Tables 1 to 4). Other hydro or steam could certainly be marketed at the same rate (steam is currently marketed throughout the country at that

rate) and hence the Cowlitz power has no value to the region over and above power capable of being produced from other sources. The record is devoid of any evidence to the contrary.

As pointed out by the Presiding Examiner in his Recommended Decision (Tr. 139-143), the Commission staff, in its main brief in the Kern case, placed considerable reliance upon recreational benefits, evaluated in terms of "better living" for the people concerned. In the instant case, both the Commission staff and the Commission itself have ignored that concept.

This is apparently in justification of the minimum benefits which the Commission allots to both the commercial and recreational fishery, and has no support whatsoever in the record except in the Opinion and Order itself. We respectfully submit that the Commission itself, in the Opinion and Order in this case, has supplied the only evidence of forcing the full utilization of the Cowlitz River for power alone, and the consequent destruction of its valuable and irreplaceable fishery.

At the present time seventy per cent of the original natural spawning areas for anadromous fish in the Pacific Northwest has been destroyed forever (Ex. 39). The Cowlitz River is one of the two most important tributaries upon the Columbia River. The Columbia River fishery is a \$20,000,000 industry and the Cowlitz constitutes at least ten per cent of that fishery (Tr. 1477-1488). If the Conserva-

tion Authorities cannot defend the Cowlitz River against construction of these dams, they cannot defend against loss of every other creek, stream or river in the entire Columbia Basin and the Puget Sound Region, and ultimately the fishery industry of the State of Washington will be completely destroyed. This is likewise true of the States of Oregon and California and the Territory of Alaska.

At the present time the Federal Power Commission and the City of Tacoma stand alone against the considered opinions and judgments of the States of Washington, Oregon, and California, the Director of Fisheries for the Territory of Alaska, every outstanding salmon fishery expert in North America, the Department of the Interior, the Army Engineers and the President's Water Resources Policy Commission.

In view of this, and upon consideration of the entire record, it is apparent that the Commission has acted arbitrarily and capriciously and has not exercised its judgment as required by Section 10-a of the Federal Power Act.

- 3. There Is No Substantial Evidence to Support the Several Findings and Conclusions in the Opinion and Order of November 28, 1951 That the Fish Runs in the Cowlitz River Will Not Be Substantially Destroyed by the Proposed Dams; That Any Substantial Portion of Such Fish Runs Can Be Saved If the Dams Are Constructed; That Any Substantial Benefit Will Be Derived From the City's Proposed Conservation Practices, Facilities and Improvement of Fish Habitat; and That Hatcheries Proposed by the City Can Be Constructed, Operated**

and Maintained for the Cost Arrived at by the Commission; and the Commission's Values of Power Benefits and Fishery Resources.

No salmon fishery expert at the hearing held out any hope for the laddering system. The only witness who thought they might work was Dr. Hubbs, who admittedly has no experience in the management of a salmon resource or the design of fishways for salmonoids. Even he admitted there might be losses of sexually mature fish and recommended a program of further testing.

The highest existing dam over which salmonoids are being laddered is Bonneville, which has a height of 67 feet. (There is presently under construction ladder facilities at McNary Dam which will have a vertical ascent of 90 feet.) In this case we are faced with the problem of passing fish over a dam 185 feet in height and then over another 325 feet in height, with the problem made much more difficult because of the fact that the fish are greatly weakened by being in an advanced state of sexual maturity upon arriving at the dams (Ex. 30, p. 3). This problem is not present at Bonneville, nor is it present at McNary Dam (Tr. 3196-3198). It is known that a number of adult fish fail to locate the fishways at Bonneville Dam and that others fail to ascend it after entering it.

The fishery experts who have spent years planning the fish protective facilities at McNary Dam have doubts as to the eventual success of the facilities in passing the adult fish over the dams. The fishery

problem at both Bonneville and McNary Dam is simple compared with those presented by the proposed Cowlitz Project. It is no wonder that the fishery experts unanimously agree that there is little hope that the proposed laddering systems on the Cowlitz Dams will successfully pass the adult fish over the dams (Ex. 30, p. 3; Ex. 40, p. 4; Ex. 39, p. 9; Ex. 27, pp. 2-3; Ex. 35, p. 4).

Nowhere has the problem of collecting downstream migrants and passing them over or around dams been overcome. Here this extremely complex situation must be overcome twice. Since there will be no spill over the dams and the turbines will kill fish, a method must be found to get the downstream migrants past the dams, or it will be useless to get the adults on the spawning beds above the dams in the unlikely event that this proves possible.

While adult fish have been trapped and hauled around some dams and other obstructions with some degree of success, the problem has never been successfully solved under conditions that will prevail on the Cowlitz River. The only trapping and hauling operation that has been attempted on a stream of substantial volume was the Grand Coulee salvage operation performed in connection with the construction of the Grand Coulee Dam. Even though the fishery people were not there faced with a problem of maintaining fish racks in an uncontrolled stream, as they would be on the Cowlitz River during the construction period, and even though the Rock Island Dam pro-

vided an ideal situation for the trapping of the fish, the mortality of the fish trapped and hauled and their offspring ran as high as 70% in the Grand Coulee operation (Tr. 3619).

The trapping and hauling operation on the Cowlitz presents difficulties far beyond those encountered anywhere else where this method has been used. To begin with, until the dams are completed fish-tight racks would have to be maintained in the uncontrolled river where the stream flow could be expected to vary from about 1,000 cubic feet per second to over 40,000 feet per second, with a rise and fall of from 12 to 15 feet at the location of the rack. The best efforts of the Army Engineers and the Bureau of Reclamation have been unsuccessful to date in maintaining fishracks under much more favorable conditions (Ex. 35, pp. 3 and 4; Ex. 30, p. 3). No one would contend that a barrier could not be designed that would stay in the river. However, the problem is not that simple. The barrier must be capable of withstanding the flow of the river and passing the same, and at the same time present no opening large enough for the upstream migrants to pass through. Provision must also be made to keep the racks free of debris. This would constitute a major problem during the construction period. The City of Tacoma has offered no plans for these racks to date. We believe it is unreasonable to expect that, in the two years provided for in the Order prior to the commencement of the construction, the City of Tacoma

will find the answer to these problems which have so far baffled the Army Engineers, The Bureau of Reclamation and State and Federal fishery agents for many years (Ex. 30, p. 3; Ex. 35, pp. 3 and 4).

In the unlikely event suitable racks could be successfully constructed and maintained in the river, losses of upstream migrants will occur in many ways. Past experience tells us that many will fail to find and enter the trap; others will suffer injury and mortality in fighting the racks; still others will be so delayed in finding and entering the trap that they will spawn prematurely; more will be damaged by abrasion resulting from their handling during the trapping and hauling operations; some will find their way through the racks and perish against the dams, with the result that the mortality may well equal that experienced on the Grand Coulee salvage project. This, of course, would result in rendering these valuable runs of fish non-productive, even if the much more complex problem of handling the downstream migrants could be solved at this time (Ex. 35, pp. 2, 3 and 4; Ex. 27, pp. 2, 3, 4 and 5).

The Opinion of the Commission overlooks entirely the immense difficulty of screening the penstocks. As was stated in the record by a number of the experts with years of experience in these matters, screening devices on fish protective facilities present one of the most difficult problems encountered in the entire field. This arises principally from the difficulty in keeping such screen free of debris, for if

debris gathers on a portion of the screen, excessive velocities are created through the remainder of the screen, with the result that the fish are impinged on the screen by the pressure of the water, and perish. Because of this fact stationary screens have been largely discarded as impractical and are used only where there is a small volume of water to be screened, and the screens are located so that they may be readily and frequently cleaned. Otherwise, mechanically self-cleaning screens are used and considerable difficulty is still encountered in keeping them sufficiently clean. Here 3,000 cubic feet per second will pass through each screen. The screens themselves are stationary and will be submerged 200 feet. They will therefore be inaccessible for cleaning. Screens of the type in the proposed fingerling system have never been used elsewhere. All of the qualified experts were of the opinion that they will not work on the Mossyrock Dam (Ex. 35, p. 6; Ex. 27, p. 6; Ex. 35, p. 10; Ex. 30, p. 10). Their judgment is based upon their years of experience in attempting to maintain satisfactory screens under much more favorable conditions. They were likewise of the opinion that a substantial number of fingerlings would pass through the screen openings into the turbines where they would be decimated.

We do not believe that the tests conducted by the city and those conducted by the state are indicative of the results that can be expected at the Mossyrock Dam. Both tests were conducted in settled

reservoirs where debris is at a minimum. Even under those conditions the tests conducted by the state indicated the screens would need cleaning at least every three days. It is logical to expect that in a newly created reservoir there will be a much greater abundance of debris until the reservoir has been in existence a number of years and the debris has had a chance to settle to the bottom. The cleaning problem is complicated further by the fact that the Cowlitz is a glacial stream and carries a rather heavy burden of silt (Ex. 27, pp. 6 and 7).

It is difficult to imagine how the City of Tacoma's proposed screening apparatus can be tested short of a full scale experiment in a newly formed reservoir. If the screening method fails, as the experts unanimously believe it will, the runs of fish above the Cowlitz Dams will be destroyed through the destruction of the fingerlings in the turbines (Ex. 30, p. 5; Tr. p. 2522).

The proposed device for lowering the fingerlings from the reservoir through the dams into the tailwaters is completely revolutionary and untried in any respect.

Several of the experts believe that, even if the fingerlings enter the risers, they will leave through the first port they encounter because of their known tendency to resist the increasing pressure they will encounter if they are carried down the riser. Others believe they would be induced to leave the riser because of the attraction created by the light entering

the riser through the ports (Tr. 2121, 1837, 2883, 2882, 3242).

No one knows at this stage what currents must prevail in the risers to induce the fish to pass through the risers into the collection chamber (Tr. 2120, 2183). Unless a relatively slight current will accomplish this purpose the fingerlings will be impinged upon the screens in the collection chamber and perish (Tr. 2888, 2890).

At this stage no one knows how long the fish must remain in the collection chamber to become sufficiently decompressed prior to being released into atmospheric pressures, nor does anyone know what volume of water must be present in the collection chamber to accommodate the quantity of fish that might be present at one time and prevent their death by suffocation (Tr. 2883, 2121, 2122).

It is obvious that these immature fish will encounter conditions within this fingerling system completely different than those found in their normal environment. Experience has taught fishery experts that it is difficult, if not impossible, to predict the reaction of fish to environmental changes (Ex. 30, p. 6). It is therefore unreasonable to consider this as entirely an engineering problem, such as it would be if it were a case of transporting inanimate objects over or around an obstacle.

All of the salmon experts were of the unanimous opinion that the apparatus as presently designed,

or as it might be designed in view of our present knowledge of fishery problems, would fail to work. Many of the imponderables that remained to be determined have been set forth in preceding paragraphs.

Perhaps the most serious problem has not been mentioned. The experts who testified for the interveners (Petitioners in these proceedings) were of the opinion that, because of the small volume of water that would enter the ports and the low velocities that would prevail and the small areas of port openings, compared with the vast area of the face of the dam, few of the fingerlings, if any, would locate the ports and enter the risers (Tr. 2881, 2120, 3239). Those that failed to do so would become landlocked and perish. Whether they would find the openings or not is difficult indeed to determine short of full scale testing of the facilities over the life cycles of several runs of fish. Since the ratio of downstream migrants to returning adult fish often exceeds 100 to 1, it would be impossible immediately to determine what portion of the fingerlings were entering the ports and what portion remained in the vast reservoir behind the dams. The answer would only become apparent upon the return of the adult fish from that particular run (Tr. 2922). None of the fishery witnesses, including Dr. Hubbs, could suggest a means of determining this problem short of full scale testing over several life cycles of fish.

In this respect it should be kept in mind that the proposed fingerling systems are huge steel struc-

tures with many hundred feet of pipe and many valves, and that it will become an integral part of the concrete dam. Since no such device has ever been built, it will have to be custom made and ready for inclusion in the dam when the concrete is poured. Obviously working drawings of this device will have to be prepared at an early date if construction of the dams is to commence within two years of the date of the Order. It is difficult indeed to see how an adequate testing program to work out the many imponderables presented by this complex apparatus can be conducted in such a period. It is even more difficult to determine how substantial changes in the apparatus can be made after the same has been incorporated within the concrete dam and found to be unsuitable (Tr. 2142).

Even if the many complex fish protective devices can be made to work as well as the city hopes, there will be unavoidable losses at each which, in the accumulative, when added to the losses occurring in nature, would likely render these runs non-productive i.e., barely capable of maintaining themselves and not capable of producing fish for the fishery. Experience at the most simple and best designed fish passage facilities has proved that a number of fish always fail to negotiate them successfully. This is because it is impossible to predict how they will react to changes in their natural environment. Here a series of losses can be expected which, even if each were insignificant by itself, when added together

can be expected to reduce the runs to insignificance (Tr. 2999, 3000).

Substantial losses of adult fish can be expected at each of the racks, each of the ladders, in the Mossyrock fish locks, on the Mossyrock fish "chutes" and in the tank truck, if that method is used. Substantial losses of downstream migrants can be expected through the turbine screens, through the collection system screens, in the collection chamber from suffocation and premature decompression, from injury by adult fish in the ladders and in the collection system, from failure to find the port openings, etc. These losses plus the loss of 400,000 sq. yds. of valuable spawning area under the reservoirs will make it impossible to maintain production runs of fish in the Cowlitz River above the Mayfield Dam site (Ex. 35, p. 2; Tr. 2999, 3000).

In view of all of these considerations and the wealth of testimony given by the many expert witnesses produced by Interveners, Petitioner in these proceedings, it is abundantly clear that the runs of fish above the dams cannot be saved once the dams are in place. All of the experts experienced in salmon management and the design, maintenance and operation of salmon fish ways were unanimously of this opinion. Not one salmon expert could be produced who held any other view.

The record conclusively shows that, at the time when spawning fish are utilizing that portion of the Cowlitz River below the Mayfield dams site, the river

is in the process of increasing from its low in the summer to its high in the winter and that the hourly and daily fluctuations of river stages are substantially less than are permitted by this order. Since the river is increasing in volume, there is little danger that many spawning beds will become uncovered prior to the hatching of the fish. On the other hand, where hourly and daily fluctuations occur, such as are permitted in this Order, eggs deposited on shallow riffles could become uncovered with the result that the eggs would dry and perish. There is the further possibility that both ascending adults and descending fingerlings would become trapped on shallow riffles because of the sudden drop in river level. There is further indication that these artificial changes in river level are disturbing to upstream migrants and cause them to delay their journey to the spawning beds beyond their tolerance. Mr. McKernon, Mr. Barnaby, Dr. Van Cleve and Mr. Frye testified in detail on this problem. Their testimony was based not on speculation, but on actual observation of the damage that has been done downstream from other power installations in the Pacific Northwest. There is no reason to expect anything different on the Cowlitz River (Tr. 2901).

From the experience at the Aerial Dam on the Lewis River, it can be expected that the water temperatures of the Cowlitz River below the dams will at times be increased above the tolerance of salmonoid fish (Ex. 28, pages 29, 22, 23; Tr. 2181 and

2183). There will also be toxic changes in the chemical content of the water. These changes have been proved to be fatal to fish eggs (Ex. 28, pages 24, 25, 26, 27, 28). If such changes occur in the temperature and chemical content of the Cowlitz—and there is every reason to believe they will and none to believe they will not—all of the spawning area in the main stream below the dam will be ruined.

There is likewise nothing in the record to support the statement appearing in the Opinion (Tr. 530) that a benefit would be derived through the decrease of pollution because of increased low water flow. There could be no better proof of the absence of a pollution problem than the abundance of fish that presently utilize the river.

It should be stated that never in history has a major run of fish been maintained by hatcheries alone; even Dr. Hubbs knew of none. As is disclosed in Exhibit 25, and as was stated by Mr. Riddle (Tr. 3558-3559), hatcheries are used as a supplement to natural propagation and not as a substitute therefor. The extent to which they may be used is dependent to a very considerable extent upon the amount of food available to the fish in the natural river after they are hatched and released from the hatchery. There is little hope that the river system above the dams will be available for use by either adult or immature fish after the dams are in place, since the dams will be a complete barrier to both adults and fingerlings. The experts most familiar

with the river believe it is supporting as large a population at the present time as it is capable of unless more of the system can be made accessible to the fish. It is obvious, therefore, that the river system below the dam will not be able to accommodate substantial quantities of hatchery fish in addition to those already using this portion of the river.

The ability of the system to feed and maintain fingerling fish will also be greatly reduced because of the dams themselves. As was indicated in Dr. Van Cleve's testimony, after the fingerling fish emerge from the gravel they migrate rather freely and extensively over the river system in search of food during the time they spend in fresh water (Ex. 30, p. 9). These dams will, in effect, deprive them of the food contained in more than 50% of the river system. Even Dr. Hubbs does not claim that fingerlings can ascend the ladders or be trapped and hauled around the dams. It, therefore, is apparent that the lower half of the system will be less productive than it is in its natural condition, since the food supply available to the fingerlings hatched below the dams will be very materially decreased (Ex. 27, p. 4).

The only two known sites that are suitable for hatcheries on the Cowlitz River system are presently earmarked for development by the State of Washington under the Lower Columbia River Fisheries Program. Again it is difficult to see what contribution Applicant can make in this regard.

Ninety percent of the spring Chinooks spawn above the dams. These fish have an annual value of almost \$200,000 and cannot be reared in hatcheries or in the warmer waters of the lower portions of the river (Ex. 28, pp. 6 and 7).

As the Examiner found in his Recommended Decision, the Applicant has so far made no proposal relative to conservation practices, facilities and improvements on the Cowlitz River watershed that are capable of being evaluated. Furthermore, the State of Washington and the United States Wildlife Service, after years of study of the watershed and its fishery resources, have determined upon a program that will increase the fish producing potential of the watershed even beyond its present high level. This program is now going forward as a part of the Lower Columbia River fisheries program. It is difficult indeed to conceive what contribution the City of Tacoma could add to the program now contemplated.

Without any supporting testimony appearing in the record the staff has assigned an arbitrary figure as the City's obligation in the way of providing hatchery facilities and making stream improvements. There was no testimony on the number of hatcheries that might be required or their probable cost, nor was there any evidence as to what stream improvement programs might be necessary and what they would entail in the way of cost. The figures were literally picked out of the air. The same is

true insofar as the annual cost of operating and maintaining the facilities is concerned. This same objection goes to the values arrived at in Findings No. 49, 50 and 51, which are additionally fallacious since a power value based upon an invalid comparison is used, as is set forth elsewhere in this petition.

C.

THE ORDER OF NOVEMBER 28, 1951, CONSTITUTES AN UNLAWFUL EXTENSION OF THE AUTHORITY OF THE COMMISSION UNDER THE FEDERAL POWER ACT IN THAT ITS SPECIFIC PROVISIONS DO NOT PROVIDE FOR THE DETERMINATION OR ADEQUATE TESTING OF THE EFFECTIVENESS OF THE FISH PROTECTIVE DEVICES; PROVIDES FOR THE MANAGEMENT OF STATE FISHERY RESOURCES BY THE CITY OF TACOMA; AND PURPORTS TO PROVIDE FOR FURTHER ESSENTIAL PROCEEDINGS WITHOUT OPPORTUNITY FOR PETITIONERS TO BE HEARD.

Specifications of Errors 18 through 20 are considered hereunder.

The laws of the State of Washington require that fish protective facilities installed on any hydroelectric project in the State be approved by the Director of Fisheries and the Director of Game, who head the two State conservation agencies charged with protecting the fishery resources, which are the sole property of the State, and in which the Federal Government has neither a property interest, nor the right to regulate in any manner. It is obvious, therefore, that even though this Commission might feel that it has the authority to license this project, it can do so only upon requiring the Applicant to pro-

vide fish protective facilities to the satisfaction of the State agencies. (The right of the City to proceed in derogation of State law is discussed elsewhere in this brief.)

The provision for further testing is also defective in that it provides no adequate safeguard. It gives the Commission the right ultimately to determine the adequacy of the fish protection facilities and does not require it in any way to be bound by the recommendations of the Secretary of the Interior. It is submitted that, while the Commission and its staff are expert in many fields, they are not suited by training or experience to be the ultimate judges of the effectiveness of fish protective facilities.

While the Secretary of the Interior indicated in his letter that he was hopeful that fish problems in connection with high dams would be solved some day, he certainly did not indicate that he believed the solution was at hand, or that it could be found within a period of two years, in connection with the Cowlitz dams, nor did he alter his position of being opposed to the dams because of their conflict with the Lower Columbia River fisheries program and the comprehensive plan for the development of the Columbia River Basin.

The Commission and Applicant recognize there are many uncertainties concerning critical parts of the facilities. The salmon fishery experts recognize there are many more, and acknowledge that they con-

stitute problems they have been unable to solve after many years of effort. By the terms of the Order the Applicant will be forced to conduct its tests and experiments in an atmosphere of haste and urgency so that construction can be commenced and completed according to the terms of the license. The test of the efficiency of any fish protective device is its ability to maintain a run of fish. It is not sufficient that it be capable of passing a portion of a run. It must be capable of maintaining the run at a productive level. Here the problem is magnified because there is a series of untried devices. They must all work satisfactorily or the runs will be lost. The effectiveness of such devices can only be determined after full scale testing over the life cycles of several runs of fish and even then it might not be possible to determine what part or parts of the devices failed. Ordinary prudence would require such testing before placing a valuable state resource at the mercy of such devices.

The Commission has found that Applicant has not sustained its burden of proof by producing plans which can presently be expected to save the fish. The decision is apparently based upon the *hope* that it will do so prior to commencing construction. However, no provision for the withdrawal of its license is made in event it fails to do so. It would seem that any applicant, who desires to undertake a project which will jeopardize a valuable State resource, should be required to prove that he has provided adequate protection for the resource before he is authorized to proceed.

In this regard it should be noted that the Commission's decision is predicated upon the proposition that it will be possible to have the power without "undue loss of the fishing resource." Since this is the case, Applicant should be required to prove the effectiveness of its program before commencing construction. Article 30 of the Order fails to require this. It leaves the Commission with authority to allow Applicant to proceed, even though the testing and experimentation might conclusively prove the devices will fail to save the runs. This would produce a situation completely inconsistent with the Commission's opinion, and one which apparently the Commission does not find to be in the public interest.

If the Commission intends that Applicant must install fish protective devices that have been proved to be reasonably successful, it should make such a condition in the license. On the other hand, if the Commission intends to allow the construction of the dams whether the facilities will work or not, that fact should be set forth in the order at the present time.

Many features of Applicant's proposed fish facilities are completely revolutionary and untried. Some are only theories and ideas. The Commission, and even Applicant, recognize the need for a program of testing and experimentation. It is likely that many changes in the plans will be made as the testing proceeds, just as Applicant has already changed numerous features of the various devices. Articles 30 and 31 of the Commission Order permit the Commission

to approve and adopt such plans without giving Interveners (Petitioners in these proceedings) an opportunity to be heard as to the probable effectiveness of the plans, in spite of the fact that a valuable State resource is in jeopardy. The inclusion of proper plans for the fish protective devices is an essential and important part of the application to obtain a license. Interveners (Petitioners in these proceedings) are entitled to participate fully in all matters material to the granting of a license. Articles 30 and 31 deny them this right.

In this regard, it is submitted that, since further planning is required, a license to construct is unauthorized until all plans have been approved.

The maintenance, propagation and management of fishery resources within the State of Washington is the sole and exclusive responsibility of the State. The Federal Government has no authority to intervene in any manner, and can do so only at the invitation of the State and to the extent permitted by the State, as is discussed in another portion of this brief. The effect of Article 31 is to permit the Commission first to determine how this resource shall be managed, and then place the responsibility of management upon a municipality to the total exclusion of the sovereignty of the State.

VI. CONCLUSION

Upon the entire record in this cause the Federal Power Commission has exceeded the jurisdiction conferred upon it by the Federal Power Act. The City of Tacoma cannot proceed in derogation of valid and positive state law. The basic Findings and Conclusions of the Commission are not supported by substantial evidence and the Order of the Commission is fatally defective in that its specific provisions do not make adequate provision for the protection of the state resources and deprive Petitioners of the opportunity of being further heard in regard to such resources.

We respectfully submit that the Orders of the Commission in this cause should be annulled and set aside and the said cause remanded to the Commission for further action consistent with the determination of this Court.

Respectfully submitted,

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The first part of the paper discusses the general theory of the firm, focusing on the role of the entrepreneur and the importance of capital structure. It examines how the entrepreneur's personal characteristics and the firm's financial structure influence its performance and growth. The second part of the paper presents empirical evidence on the relationship between capital structure and firm performance, using data from a large sample of firms. The results show that firms with higher debt ratios tend to have lower performance, but this relationship is moderated by various factors such as firm size, industry, and the entrepreneur's experience. The paper concludes by discussing the implications of these findings for policy and practice.

The second part of the paper discusses the empirical evidence on the relationship between capital structure and firm performance. It uses data from a large sample of firms to examine how the debt-to-equity ratio affects various measures of performance, such as profitability, growth, and risk. The results show that firms with higher debt ratios generally have lower performance, but this relationship is not uniform across all firms. For example, larger firms and firms in certain industries may be able to obtain financing more easily, which could lead to higher debt ratios and potentially higher performance.

The paper also discusses the implications of these findings for policy and practice. It suggests that policymakers should be aware of the potential risks associated with high debt ratios, particularly for smaller firms and firms in industries with high fixed costs. At the same time, it also notes that a certain amount of debt can be beneficial for firms, as it can provide a source of capital that is not subject to the same constraints as equity. The paper concludes by suggesting that further research is needed to better understand the complex relationship between capital structure and firm performance, and to develop more effective policies to support the growth and development of firms.

APPENDIX A

UNITED STATES OF AMERICA
FEDERAL POWER COMMISSION

In the Matter of
CITY OF TACOMA, Washington } Project No. 2016

OPINION NO. 221

BY THE COMMISSION:

The City of Tacoma, a municipality in the State of Washington, on December 28, 1948 filed an application for a license under Section 4 (e) of the Federal Power Act for authority to construct, operate, and maintain the Mossyrock and Mayfield developments on the Cowlitz River in Lewis County, Washington, designated as Project No. 2016.

The Mossyrock dam would be located at about river mile 65 and the Mayfield dam at about river mile 52. The Mossyrock power plant would have an initial power installation of three generating units of 75,000 kilowatts each, with provision for a fourth unit of the same size. The initial installation at Mayfield would be three 40,000-kilowatt units with provision for a fourth unit of the same size, thus giving the two plants a combined capacity of 460,000 kilowatts. Thus, these two plants would add 190 per cent to the present capacity of the Tacoma generating plants and nearly 10 per cent to the present combined total installation of 4,700,000 kilowatts in the Pacific Northwest power pool. Three years would be re-

quired after authorization before the proposed plants could be placed in operation, this project being one of the most readily available sources of power in the Pacific Northwest.

Since the City of Tacoma's generating, transmission and distribution system is already interconnected with the other public and privately-owned power plants operating in the Pacific Northwest power pool, the addition of these sizable units west of the Cascade Mountains would be of benefit to all of the power consumers in the area, particularly as a diversity of rainfall on both sides of the Cascades would enable the City to firm up some of the other developments operating in the power pool, especially during the winter months when the power load is highest. In addition, these plants would be located within a relatively short transmission distance from Tacoma, Seattle and Portland, the heavy load centers in the area.

The severe power shortage in the Pacific Northwest is a matter of national concern, particularly when every effort is being made to increase the industrial output and the output of those materials calling for large blocks of low-cost power, and of course the principal increase in the power demands of the area has been due to the expanding defense requirements which must be met. Furthermore, the serious regional power shortage in this area will not be met by the planned Federal power construction, but additional generating plants must be built as

rapidly as possible, especially where, as here proposed, the installation can be made with a minimum loss of time and with maximum assistance to other power suppliers.

On the other hand, Section 10 (a) of the Federal Power Act requires that licenses shall be issued only for those power projects which in the judgment of the Commission are best adapted to comprehensive plans for full development of those streams subject to Federal jurisdiction and, of course, other benefits than power production may be secured by utilization of streams in their natural state or through improvements. The engineering possibility of realizing the anticipated power benefits from the proposal of the City is not to be seriously questioned, nor is it denied that large flood control and incidental navigation benefits would result. However, the Cowlitz River is extensively used for spawning by anadromous fish, and the City is confronted by those who contend that this natural river use will be completely destroyed by the proposed dams.

The Mossyrock dam would be about 510 feet in height and the Mayfield dam about 240 feet in height, both above bedrock, and it is said that anadromous fish would be unable to reach the pools above the dams, particularly the higher of the two, during the spawning season, nor could the small fingerlings find their way downstream. Fish ladders having a vertical ascent of 65 feet are in operation at the Bonneville dam and the same facilities are planned at the Mc-

Nary dam just upstream to make possible an ascent of 92 feet, but no fish ladders over 200 feet in height have been installed at any other dam. Furthermore, it is said, the other fish handling facilities and conservation measures proposed by the City will not be effective and the present valuable fishery resources will be destroyed.

In addition to offering physical obstacles to fish passage upstream and downstream, the State Attorney General, the Department of Fisheries and Game, and the Washington State Sportsmen's Council, Inc., object to the proposed dams on legal grounds. They argue that the application should be denied because construction of any dam greater than 25 feet in height is forbidden by the State Columbia River Sanctuary Act in any tributary of the Columbia downstream from the McNary dam and within the migratory range of anadromous fish. We recognize, of course, that any State statute represents an expression of the intention of the Legislature by which it was enacted, but since we are dealing here with the applicability of a Federal statute it is equally clear that a State statute cannot stand as a complete legal bar to authorization of a State prohibited project if in the judgment of the Commission that project is best adapted to comprehensive plans and would be of unmistakable public benefit. We should not, merely in reliance upon the State Sanctuary Law, attempt to escape responsibility for considering the broader public interest questions before us under the Federal Power Act.

Another bar to approval of the application suggested by the interveners, and apparently relied upon by the Examiner, is the Columbia River Review Report submitted in 1948 by the United States Army Corps of Engineers. This is presented to us as a specific recommendation for indefinite postponement of any water-power development on the Cowlitz River because that river was included in the Lower Columbia Fisheries Plan prepared by the United States Fish and Wildlife Service in cooperation with the Fish and Game Commissions of the States of Washington, Oregon and Idaho, and because the Army Engineers were said to be of the opinion that the Cowlitz River was needed as a spawning area for fish and that there was an adequate supply of electric power available elsewhere in the Columbia Basin.

We note initially in this connection that while Congress has appropriated funds for certain of the developments included in the 1948 report it has not given its approval to the Lower Columbia Fisheries Plan nor to the basin plans of the Army Engineers. The current views of the Chief of Engineers were expressed in his report to this Commission under Section 4 (e) of the Federal Power Act on the application of the City of Tacoma for a license for Project No. 2016. In reporting to the Commission the Chief of Engineers says that no recommendation had been made in the Review Report for development of the Cowlitz sites because of the interest of local communities in undertaking such development and because of the need for correlation of power development by

local interests with the needs of preservation of the fishery resources. In other words, in 1948 the Chief of Engineers recognized the local interest of the City of Tacoma in development of the Cowlitz, which would render Federal investments unnecessary, and he was of the opinion that the power supply was then adequate. As we now see, the power supply is presently inadequate and the City of Tacoma desires to proceed.

The comments of the Commission upon the 1948 Review Report were, of course, directed principally to the power features of the plan there submitted. The Commission has neither the responsibility nor the necessary staff for making an independent evaluation of other uses than power in commenting upon such comprehensive plans of the Army Engineers as were submitted in 1948 and it made no attempt at that time to weigh the merits of the proposal of the United States Fish and Wildlife Service to postpone consideration of the development of those streams tributary to the lower Columbia River. Since the Army Engineers did not then propose Federal development of the Cowlitz River, the Commission was justified in taking the recommendations of the Fish and Wildlife Service at their face value. Upon the filing of the instant application, however, the responsibilities assigned to the Commission under the Federal Power Act made impossible any further postponement of consideration of the development of the Cowlitz River and required full and impartial

evaluation of the applicant's proposal on its merits and the objections thereto, including full opportunity to all Federal and State agencies in any way interested in the proposal to present their views and relevant information in support of their recommendations.

This leaves for discussion the claims of the applicant and of the fishery interests with respect to the fishery resources of the Cowlitz River upstream from the Mayfield dam, the effects reasonably to be anticipated from construction of the proposed dams, and the economic and public benefits under natural conditions and with the improvements proposed by the City.

Since the stream discharge below the Mayfield dam would be smoothed out seasonally to a substantial degree, there would not appear to be any jeopardy to the fish population below that dam if the construction proposed is undertaken. In fact, the evidence indicates that there may be an increase in those fishery resources. The daily power operations at Mayfield should be such as not to injure the fish, and we should reserve the right to consider this situation from time to time as occasion arises.

The important anadromous fish inhabiting the Cowlitz watershed are the spring chinook, fall chinook, silver salmon, the steelhead and cutthroat trout, and the smelt.

The salmonoids and the smelt perish after spawning while the sea-run trout spawn several

times before dying. Each race of the anadromous fish of Cowlitz River watershed utilize spawning areas suitable to its ecological niche and each has well defined migratory and spawning habits of its own. The anadromous fish use the fresh water of the Cowlitz River for spawning purposes and early rearing of the young, the greater portion of their growth and life being associated with the sea. Most of the anadromous fingerlings migrate to sea during the spring of the year. The effect of man-made changes and of pollution on the fish has been adverse to some degree. The reduction of pollution through increase in low water flow, as proposed by the applicant, should be beneficial.

The Examiner made certain findings as to the gross and net values of the fish using the Cowlitz River, and while there may be some question as to the actual values, we are adopting his findings for the purpose of our analysis, since the values which he adopted appear to be ample. Although the values assigned to the recreational aspects of the fishing may be in part conjectural, the commercial fishing values have a fairly substantial foundation. In any event, we are convinced that the Cowlitz is an important fishery stream in the Columbia River system and our inquiry into the possibility of loss of any portion of these natural resources has been upon the assumption that whatever the actual values may be, they are of material importance to the people of the area and should not be lightly brushed aside.

Although the sports fishery, constituting a form of recreation has been evaluated in monetary terms, a suggestion has been made that it may in addition have substantial intangible values. The fact that such recreation may have intangible values does not mean that they are large or significant and there is no basis for assuming that they outweigh the rather tangible and large flood control, navigation and power benefits which can result from the improvements proposed. In this particular region, as in many other sections of Washington and Oregon, there are many recreation areas of the sports fishery type and we are not faced with a unique situation as was the case when we required a substantial power loss at a Kern River dam in California in order to provide recreational advantages which could not otherwise be obtained. Therefore, there is no substantial basis for holding that the sports fishery in the upper Cowlitz has any significant intangible recreational values. Furthermore, the proposed reservoirs undoubtedly will offer other types of recreational opportunities similar to those afforded at other large reservoir projects in other streams, so that there should not be a total loss of recreational values as apparently suggested.

There would not be too much of an anadromous fishery problem at these and similar dams if means could be found for passing the adult migrants upstream and the fingerlings downstream. To get the adult fish by the dams for spawning in the upstream areas, the City proposes to construct fish ladders and

also to provide trapping and hauling facilities, so that they may reach natural spawning grounds. As a complement to the other fish protection measures, both as related to upstream and downstream migrations, the City proposes to construct and operate extensive fish hatchery facilities for artificial propagation of the fish and development of fingerlings capable of making the migrations to the sea.

The testimony does not show that fish ladders of the heights proposed, 185 feet of ascent in one case and 325 feet in the other, would be fully effective, and of course no one can tell until a test has been made and actual conditions studied. Also details of construction must be worked out, such as entrance ways and attraction water for the fish ladder, the use of resting pools and the design of adequate means to pass the fish into the Mossyrock reservoir at different elevations of water. However, in this respect, as in connection with the other fish protective measures proposed the details have yet to be worked out. With suitable design to permit a wide range of operating variations to meet situations reasonably to be anticipated, there would be provided here a full-scale laboratory for research and experimentation by means of which the answers to many perplexing problems of fish protection and propagation can be obtained. The recommendation of the Examiner for denial of the license until the City completes further experimentation at its own expense does not appear to offer a practical solution to the problem, especially

when there would be no assurance that the City would be given final authorization without many years of further study. Also, this recommendation would seem to rest upon the assumption that none of the measures proposed at this time would be of material assistance in saving the fish runs, an assumption which is not supported by the record.

It has been asserted that by the time satisfactory evidence can be obtained as to the success of the fishery conservation facilities proposed by applicant, the fishery resources may well be reduced to insignificance. Being cognizant of this possibility, we propose that the hatchery facilities be provided soon enough to assure initially maintenance of a sizable seed stock and later to complement the natural productivity above the dams. The use of fish hatcheries has been particularly successful in connection with runs of fall chinook and silver salmon, which constitute about 70 per cent of the total commercial fish and about 60 per cent in value of the commercial and sport fish. Furthermore, a substantial portion of the \$20 million proposed for Federal expenditure in the Columbia River fisheries plan, probably almost half of the total sum, is to be spent for construction of fish hatcheries and related facilities. This would seem to be an endorsement of this method of preserving anadromous fish and an indication that it should be used on the Cowlitz River.

Regardless of the details of the methods used, the record shows that adult anadromous fish are now

being passed upstream by high dams successfully and that by trapping and hauling on the Cowlitz similar fish could be taken past the proposed dams reasonably satisfactorily.

While there are several biological and engineering problems to be studied in connection with the ladder system, the record clearly does not support a rejection of the proposals at this time. We recognize that the problems will differ in several details during the construction period and after the dams are placed in operation, and the best solutions must be decided upon for each period. Studies of these problems should go forward promptly and we expect the City either to employ its own biologist or to make suitable arrangements with the State of Washington for expert assistance in exploring all possible means of working out the details of this and other problems dealing with the fishery conservation facilities.

It is when we come to the facilities proposed by the City for passing fingerlings downstream past or through the dams that the novelty of the proposal is evident. After spawning in the headwaters the adult salmon perish. The fry fish which come from eggs remain in the fresh water for several months, sometimes as long as two years, before beginning their migration downstream to salt water where their principal growth takes place. At the time of their downstream passage these fingerlings are seldom over six inches in length and the problem on streams and rivers having dams has been to provide for their passage without injury or substantial loss. Up to

the present time there have been no constructive proposals for passing fingerlings downstream past dams. Usually the fingerlings make their way over spillways or through turbines and in each case there are losses.

To solve this problem in a new and untried manner, the City proposes to incorporate a system of passageways and chambers in the upper Mossyrock dam to which the fingerlings will be attracted and through which they will pass. The downstream fish passing system for the lower Mayfield dam will be much more simple as the reservoir behind it will not have a substantial fluctuation. The turbine intakes at Mossyrock and Mayfield dams would be screened off to prevent entry of any fish.

At Mossyrock dam a series of entries or ports would be provided in the upstream face of the dam through which the fish would enter a trunk passageway to a large tank and thence through other passageways being gradually passed through the dam and released at a proper point downstream. As the flows at the penstock intakes would be only about 3,300 c.f.s. spread over a 28-foot opening, there would be a low velocity of approach and therefore the problem of screening should not be difficult of solution. If the fingerlings can be induced to enter the ports along the upstream face of Mossyrock dam, the problems of pressure and movement through the dams would be largely engineering. It is clear from the record that many details of the downstream passing facilities are yet to be worked out.

CONCLUSION

From our analysis of the evidence in the record and the arguments advanced on both sides we have reached the conclusion that a fair and reasonable balance can be struck. Probably not all of the present fishery values could be salvaged if the proposed dams are constructed, but certainly not all of those values would be lost as the interveners seem to contend.

We are required to consider all of the possible advantages and disadvantages of the City's proposal from the standpoint of the greatest public benefit through the use of these valuable water and other natural resources. The question posed does not appear to us to be between all power and no fish but rather between large power benefits (needed particularly for defense purposes), important flood control benefits and navigation benefits with incidental recreation and intangible benefits, balanced against some fish losses, or a retention of the stream in its present natural condition until such time in the fairly near future when economic pressures will force its full utilization. With proper testing and experimentation by the City of Tacoma, in cooperation with interested State and Federal agencies, a fishery protective program can be evolved which will prevent undue loss of fishery values in relation to the other values. For these reasons we are issuing the license

with certain conditions which are set forth in our accompanying order.

THOMAS C. BUCHANAN, *Acting Chairman*,

CLAUDE L. DRAPER, *Commissioner*,

NELSON LEE SMITH, *Commissioner*,

HARRINGTON WIMBERLY, *Commissioner*.

Dated at Washington, D. C.,
this 27th day of November, 1951.

LEON M. FUQUAY, *Secretary*.

Date of Issuance: November 28, 1951.

UNITED STATES OF AMERICA
FEDERAL POWER COMMISSION

Before Thomas C. Buchanan, Acting Chair-
Commissioners: man, Claude L. Draper, Nelson Lee
Smith and Harrington Wimberly.
November 27, 1951

In the Matter of
CITY OF TACOMA, WASHINGTON } Project No. 2016.

ORDER ISSUING LICENSE (MAJOR)

Application was filed on December 28, 1948, and later supplemented, by the City of Tacoma, Washington, for a license under the Federal Power Act for a proposed hydroelectric development, designated as Project No. 2016, to be located on the Cowlitz River in Lewis County, Washington.

A public hearing on the application was held in Washington, D. C., commencing on November 2, 1950, before an Examiner of the Commission, in which hearing all parties, including the Applicant and the Staff of the Commission, as well as two agencies of the State of Washington, the Attorney General of the State of Washington, and the Washington State Sportsmen's Council, Inc. participated, and presented testimony and documentary exhibits. In addition, the Commission itself held a portion of the hearing in Tacoma, Washington, at which all persons desiring to speak either in favor of or in opposition to the issuance of a license for the proposed project were heard. After the close of the hearing,

briefs were filed by the various parties and by the Staff and a recommended decision was rendered by the Presiding Examiner containing findings and conclusions. On October 31, 1951, the Commission heard oral argument on exceptions to the Examiner's recommended decision.

For the reasons set forth in Opinion No. 221, adopted this date and made a part hereof by reference, and upon consideration of the entire record in this matter, including the reports of the Federal agencies, protests from interested citizens, the briefs of the parties filed in connection therewith, the Examiner's recommended decision and the oral argument thereon, the Commission *finds*:

- (1) As previously found by the Commission, construction and operation of the two dams and reservoirs comprising proposed Project No. 2016 will affect lands of the United States; and could be so operated as to materially affect the navigable capacity of the Cowlitz River below the site of the proposed projects; and either or both of the reservoirs will affect the interests of interstate or foreign commerce.
- (2) The project proposed by the Applicant will consist of two dams and appurtenant reservoirs named Mossyrock and Mayfield, respectively, located on the Cowlitz River in the State of Washington. Mossyrock, with a usable reservoir storage capacity of 824,000 acre-feet, will have an initial installed capacity of 225,000 kilowatts and an ultimate installed capacity of 300,000 kilowatts. Mayfield will have a usable reservoir storage capacity of 21,000 acre-feet, an initial installed capacity of 120,000 kilowatts, and an ultimate installed capacity of 160,000 kilowatts.

- (3) The project proposed by the Applicant will have initially a plant capability varying from 345,000 kilowatts at full head to about 270,000 kilowatts, depending upon the amount of drawdown. The average dependable capacity over a 50-year period will be 275,000 kilowatts. The average annual energy output will be about 1400 million kilowatt-hours. Because of the diversity in stream flow and the large storage capacity which will be provided in the Mossyrock reservoir, a like amount of energy will also be available during a year of most adverse stream flow on the systems of the cities of Tacoma and Seattle, or on the systems of the Northwest Region.
- (4) During the months of October through the following May all or a part of up to 260,000 acre-feet of the storage capacity of the Mossyrock reservoir will be reserved for temporary storage of flood waters and in most water years additional storage capacity will be available for the storage of flood waters under the plan of operation.
- (5) Operation of the project in the interest of flood control will be equivalent to reducing the flood of record (December 1933) on the Cowlitz River (should it re-occur) from 140,000 cubic feet per second at Castle Rock, Washington, to 70,000 cubic feet per second (bank full capacity) at Castle Rock.
- (6) Water traffic on the Cowlitz River is presently confined largely to the lower six or seven miles of its length, but the river may be navigated for some miles upstream.
- (7) The project will be operated so as to increase the average minimum flow in the river between Toledo and Castle Rock, Washington, from about 1,000 cubic feet per second to 2,000 cubic feet per second with the resulting 6-inch

increase in navigable depths over the shoals in the river between those two places.

- (8) Two proposed reservoirs will be easily accessible by a state highway and will offer substantial recreational opportunities to people from local and distant areas.
- (9) The future peak loads for the systems of the cities of Tacoma and Seattle will probably increase annually by at least 40,000 kilowatts and the energy requirements will probably increase annually by at least 200 million kilowatt-hours. These probable annual increases in peak load and energy requirements do not include additional load and energy to be required as the result of defense activities.
- (10) The dependable capacity of the hydroelectric power plants of the Tacoma and Seattle systems, including the addition of new hydroelectric capacity presently planned or being installed, but exclusive of the Cowlitz project, is 700,000 kilowatts when used to serve a combined power load of 1,165,000 kilowatts. The dependable capacity is somewhat less when used to serve combined loads of smaller magnitude. This 700,000 kilowatts of dependable hydroelectric capacity will not be sufficient to serve estimated system load of Tacoma and Seattle beyond 1953.
- (11) The Northwest Region has been deficient in dependable capacity to supply the area loads for 1946 to 1949 and during those years the amount of load actually carried was in excess of dependable capacity because the river flows were in excess of those experienced during the period of the most adverse stream flow. In addition, some loads were carried on an interruptible basis.
- (12) During the winters of 1947-1948 and 1948-1949 a shortage of power supply occurred in

the Northwest Region, resulting in curtailment of load. Only because exceptionally good water conditions existed during the winter of 1949-1950 was it possible to escape serious curtailment of loads during that period.

- (13) There have been restrictions on the additions of new loads on the electric systems of the Northwest Region prior to the advent of the national emergency and the power shortage is even more serious at the present time in spite of the speed-up efforts being made by the agencies of the Federal Government and others to provide additional power supply as quickly as possible.
- (14) The actual loads in the Northwest Region have been exceeding estimated loads for the present water year 1950-51.
- (15) The existing power shortage in the Northwest Region is more acute in the area on the west side of the Cascade Mountains, including the Puget Sound area, than it is on the eastern slopes of the Cascades.
- (16) In recent years the Federal Government has provided the major portion of new power supply provided in the Northwest Region. The various Federal schedules known as "Advance Programs" show that the estimated time when new generating units would be placed in operation in the Columbia River basin have not been met.
- (17) Because of the time lag which has developed between growth or requirement for power and construction of power supply facilities, there will not be firm power available to supply full potential loads until after 1958 and interim power supply for some new industrial loads will necessarily be sold on an interruptible basis.

- (18) At the present time, during the national emergency, steps are being taken to provide as much new power supply as possible to meet the new defense electric loads. A tentative so-called "speed up program" of construction of new power supply has been prepared by the Bonneville Power Administration and others for the primary purpose of obtaining additional power supply for defense loads. This program is in final form and further authorization and funds must be obtained from Congress before the program can be completed.
- (19) If a critical water year should occur in the winter season of 1950-51 there would be a 425,000-kilowatt average power shortage in the Northwest Region of which only 125,000 kilowatts would be interruptible load.
- (20) Based on estimated future loads for the Northwest Region and the estimated power supply that is to be provided to supply such loads, there will be a deficiency of dependable capacity in the Northwest Region until about 1960, at which time there should be just about sufficient capacity for load and for adequate reserves. Without the addition of new defense loads, the deficiency in dependable capacity in 1955 will be about 430,000 kilowatts, and there could be a deficiency in plant capability of as much as 870,000 kilowatts. Should an adverse water year be experienced prior to the year 1954, it would be necessary to curtail seriously the general service load of the Northwest Region.
- (21) As the Northwest Region will continue to be deficient in power supply for approximately the next ten years, only such new loads can be taken on as can be supplied by development of new power sources.
- (22) There will be a power market available for the type of power that could be produced by the

Cowlitz Project as soon as that output would be made available and there will also be a market for all other new sources of power that might be developed under existing plans. Because of its size, location and characteristics of power output, the Cowlitz Project will be an exceptionally valuable addition to the Northwest Region power supply and will relieve to some extent the power shortage which may continue for almost a decade.

- (23) Annual peak power demand in the Northwest Region occurs during the period when the flow of water in the main stem of the Columbia River is low. As the flow of the Cowlitz is high at the time the flow of the Columbia is low, the Cowlitz Project output could fit into and be of material advantage to the coordinated operation and permit utilization of this diversity in stream flow to supply a large block of power at the time of regional system peak loads. The addition of 345,000 kilowatts of installed capacity which could be provided initially by the Cowlitz Project, if made within three years, would assist greatly in alleviating the power shortage in the Northwest Region and because the project would be located in western Washington, a displacement of power flows from the eastern portion of the Bonneville system into the Tacoma-Seattle-Portland area would result in a reduction in transmission line losses. Further, the Cowlitz River Project will improve the flexibility of the Northwest Power Pool by making available more synchronizing power west of the Cascade Mountains.
- (24) By adding from 270,000 kilowatts to 345,000 kilowatts of new capacity, the Cowlitz Project will reduce substantially the amount of "load-shedding" in the Tacoma-Seattle area that

now occurs when operating troubles develop on the system of the Northwest Power Pool.

- (25) During the flood periods on the Columbia River the Cowlitz Project could offer substantial power assistance to the Portland area.
- (26) On the basis of the evidence in this record, none of the hydroelectric projects suggested for construction in lieu of the Cowlitz Project can be constructed as quickly or as economically as the Cowlitz Project.
- (27) The Applicant has a preference, under the law, over private utilities in the purchase of power from Bonneville Power Administration.
- (28) The only new sources of power supply in substantial quantities that could be constructed by the Applicant and placed on the line by 1954 consist of the proposed Cowlitz Project and new steam electric plants.
- (29) The cost of the proposed project will be about \$135 million exclusive of any required fish handling facilities.
- (30) The estimated cost of the fish handling facilities presently proposed by the Applicant for construction as a part of the proposed project is \$7,100,000.
- (31) The annual value of Cowlitz power will exceed the annual cost of producing that power by at least \$1,700,000 based on an interest rate of 2 percent.
- (32) Although no monetary value has been assigned to the flood control or navigation benefits which could be provided by the project, the former benefits will be substantial and the navigation benefits will be direct and of increasing usefulness.
- (33) For an average cost of money of 2.5% for 42 years or 2.75% for 38 years, the ratio of gross earnings to debt service requirements would

be 1.5 under the existing rate schedules of the Applicant with a minimum realization of 6 mills per kilowatt-hour, and a debt of \$135 million could be financed by the City of Tacoma system at a satisfactory average money cost. If the Cowlitz Project cost were \$142 million rather than \$135 million, the debt could also be retired in reasonable time.

- (34) The project as proposed by the Applicant will utilize to the maximum feasible extent all of the fall and the full flow of the Cowlitz River throughout the reach of the river to be developed and the available water resources in the reach of the Cowlitz River involved for power, navigation and flood control purposes.
- (35) The project, if constructed according to the plans submitted by the Applicant, will be safe and adequate to develop the available water resources at the two sites for power purposes and the plans for the power features of the project conform with accepted engineering practices.
- (36) Proposals by the U. S. Fish and Wildlife Service for the improvement of spawning conditions and an increase of the salmon runs into tributaries to the lower Columbia River have been expanded and formalized by the Fish and Wildlife Service in the Lower Columbia River Fishery Plan. The purpose of the plan is to conserve, rehabilitate and enhance the fishery resources of the Columbia Basin, and the plan was devised to offset effects caused by constructed and proposed dams in the Columbia River Basin.
- (37) The Lower Columbia River Fishery Plan was conceived around 1945. In 1946 Congress provided legislation which enabled the States to be brought directly into the program, and on June 23, 1948, the Fish and Game Commis-

sions of the States of Washington, Oregon, and Idaho entered into an agreement with the Fish and Wildlife Service outlining the areas of authority of the States and the services and duties of each under this fisheries program. The program generally is to be performed by the States under the agreement, with funds appropriated by Congress in the annual appropriation made to the Army Engineers to carry out its civil functions, and these funds are then transferred by the Army to the Fish and Wildlife Service.

- (38) While Congress has not specifically approved or adopted the \$20,000,000 Lower Columbia River Fishery Plan, it specifically authorized and appropriated funds in the fiscal years of 1949, 1950 and 1951 to be used for specific facilities included in the plan.
- (39) Both the U. S. Bureau of Reclamation and the Army Engineers have subscribed to the objectives of the Lower Columbia River Fishery Program and to its completion by the Fish and Wildlife Service as rapidly as funds will permit. The Army Engineers in the comprehensive basin plan included in the "Review Report on Columbia River and Tributaries" have given full approval to this program, and have recommended that development of the basin be so scheduled as to permit the full implementation of the program. The Board of Engineers for Rivers and Harbors have recommended that the fishery program be advanced, and the Chief of Engineers in his letter transmitting the Review Report to the Secretary of the Army for submission to the Congress recommended that Congress give favorable consideration to the Lower Columbia River Fisheries Plan.
- (40) While there are several problems which require both engineering and biological study in connection with the fish ladder system pro-

posed for passing upstream migrants over the proposed dams before adoption of a final design, the present data in the record is promising enough in prospect as to not support a rejection of such a ladder system at this time. The alternative method of trapping and hauling upstream migrants past the dams should produce reasonably satisfactory results.

- (41) While the record does not show conclusively whether certain features of the facilities proposed for passing downstream migrants would be adequate to prevent excessive losses, the record does indicate that with proper testing and experimentation it should be possible to provide fish handling facilities of the type proposed, which will prevent undue losses of downstream migrants. Further tests and experimentation should be made before any permanent features of the fish handling facilities for downstream migrants are constructed.
- (42) While the Applicant has proposed conservation practices, facilities and improvements for conservation of the fishery resources of the Cowlitz River watershed in addition to the facilities proposed for installation at or in the dams, such proposals and the effect thereof are not sufficiently detailed in the record to permit an adequate appraisal of their effectiveness. However, they show enough promise to justify the carrying through of more detailed studies and plans.
- (43) On the Cowlitz River watershed the total annual gross value due to all fish, regardless of species, attributable to the area above Mayfield, is roughly equal to that below Mayfield, in each case being about one million dollars.
- (44) The annual net dollar value due to the fish attributable to the area above Mayfield is about equal to that below Mayfield, and in each case

that value may be considered roughly as being approximately \$600,000. The annual net value due to fish, exclusive of recreational values derived from the sportsmen's catch, is estimated to be about \$515,000 above Mayfield and about \$45,000 below Mayfield.

- (45) The annual net recreational dollar value of the sportsmen's catch of anadromous fish attributable to the Cowlitz River system above Mayfield is estimated to be about \$76,000 which is one-half the estimated gross recreational fish value. The annual net recreational dollar value which would be provided by the Mayfield and Mossyrock reservoirs would offset, to an extent which cannot be now determined, the loss of recreational value occasioned by the construction of the project.
- (46) The annual net recreational value of the sportsmen's catch of anadromous fish attributable to the Cowlitz River basin below Mayfield is estimated to be about \$136,000.
- (47) The investment cost of facilities and improvements for the Applicant's fishery resources program, if permitted to proceed under license, would be at least \$9,465,000. Using this estimated cost, which has been derived by the Staff, the annual cost of operating and maintaining facilities and improvements plus the fixed charges on the investment may be estimated at \$610,000.
- (48) The record does not show that construction, maintenance and reasonable operation of the Cowlitz Project would have any substantial adverse effect on the fishery resource below the Mayfield site, and there are indications that conditions downstream will be improved somewhat when the project is constructed.
- (49) If it is assumed that there would be no measurable loss of the fishery resources of the

Cowlitz River system resulting from the construction, operation and maintenance of the proposed project, the annual net benefits of the proposed project, exclusive of navigation and flood control benefits, would be \$1,090,000 (\$1,700,000 power value less \$610,000 fish facilities operating cost).

- (50) If it is assumed that one-half of the fishery resources above Mayfield is saved after construction of the proposed project, the annual net benefits of the project, exclusive of navigation and flood control benefits, would be \$790,000 (\$1,700,000 power value less \$610,000 fish facilities operating cost less \$300,000 fish loss).
- (51) Even if no fish were saved above Mayfield after construction of the proposed project, the annual net benefits of the project exclusive of navigation and flood control would be \$499,033 (\$1,700,000 power value less \$610,000 fish facilities operating cost less \$590,967 fish loss).
- (52) Based on cost data in the record and on estimates made to approximate other costs, the Cowlitz Project would be financially and economically feasible if constructed in accordance with the plans as presently submitted.
- (53) The Applicant is a municipal corporation; it has submitted satisfactory evidence of compliance with the requirements of all applicable State laws insofar as necessary to effect the purposes of a license for the project; and it is a municipality within the meaning of Section 3(7) of the Act.
- (54) The Applicant has submitted satisfactory evidence of its ability to finance and carry to completion the project described in the application, with such modifications as may be found to be appropriate.

- (55) No conflicting application is before the Commission. Due public notice has been given.
- (56) The proposed project will not affect any Government dam, nor will the issuance of a license therefor as hereinafter provided affect the development of any water resources for public purposes which should be undertaken by the United States.
- (57) The issuance of a license for the project will not interfere or be inconsistent with the purposes for which any reservation or withdrawal of public lands was created or acquired.
- (58) The ultimate installed horsepower capacity of the project hereinafter authorized is 474,000 horsepower and the energy generated thereby will be sold or used by the Licensee.
- (59) Under present circumstances and conditions and upon the terms and conditions hereinafter included in the license, the project is best adapted to a comprehensive plan for improving or developing the waterway involved for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water-power development, for the conservation and preservation of fish and wildlife resources, and for other beneficial public uses including recreational purposes.
- (60) The amount of annual charges to be paid under the license for the purpose of reimbursing the United States for the costs of administration of Part I of the Act is reasonable as hereinafter fixed and specified, and the amount of annual charges to be paid under the license for the purpose of recompensing the United States for the use, occupancy and enjoyment of its lands, including transmission line right-of-way, should be later determined.

- (61) In accordance with Section 10 (d) of the Act the rate of return upon the net investment in the project and the proportion of surplus earnings to be paid into and held in amortization reserves are reasonable as hereinafter specified.
- (62) The exhibits described and designated below, filed as part of the application for license as supplemented, conform to the Commission's rules and regulations and should be approved as part of the license for the project.
- (63) The proposed project will consist of two developments, namely, Mossyrock and Mayfield, as follows:
- (a) The Mossyrock development will be located on the Cowlitz River at about mile 65 and will consist of a concrete gravity dam or other suitable type of dam as may be determined by further investigation and design. The dam will be about 510 feet maximum height above bedrock and about 1300 feet in length at its crest and contain an ogee type spillway surmounted by 5 taintor gates. The reservoir will extend approximately 21 miles upstream and have an area of about 10,000 acres with normal water surface at elevation 750 feet, a gross storage capacity of about 1,372,000 acre-feet, and a usable storage capacity of about 824,000 acre-feet with a 100-foot draw-down; a powerhouse built integral with the toe of the non-overflow section of the dam as a foundation, with initial installation comprising three 75,000-kilowatt units, making a total capacity of 309,000 horsepower or 225,000 kilowatts operating under a gross head which would vary from 325 to 225 feet. Provision is to be made for a fourth additional unit of 75,000 kilowatts. A step-up

substation will be installed adjacent to the powerhouse. The Mossyrock development will provide flood-control storage as desired by the Chief of Engineers, Department of the Army.

- (b) The Mayfield development will be located on the Cowlitz River at about mile 52 and will consist of a concrete dam composed of a small arch section across the narrow river gorge, an ogee gravity spillway section surmounted by 5 taintor gates, and 2 gravity abutment sections, the dam to have a maximum height of about 240 feet above bedrock and a length of about 850 feet at its crest; a reservoir extending approximately 13.5 miles upstream to the Mossyrock dam with an area of about 2,200 acres with normal water surface at elevation 425 feet, a gross storage capacity of about 127,000 acre-feet and a usable storage capacity of about 21,000 acre-feet with a 10-foot draw-down; a tunnel about 880 feet long, with associated concrete head works, fish screens, forebay, gate house, and steel penstocks leading to the Mayfield powerhouse; a powerhouse with initial installation comprising three 40,000-kilowatt units making a total capacity of 120,000 kilowatts, or 165,000 horsepower, operating under a gross head which would vary from 185 to 175 feet. Provision is to be made for a fourth unit of 40,000 kilowatts. A step-up substation will be installed adjacent to the powerhouse. Double circuit 230-kilovolt transmission lines on steel towers will connect the two powerhouses and extend to the Cowlitz substation on the outskirts of Tacoma. These lines will have an aggregate length of about 60 miles.

- (c) Such fish ladders, fish traps or other fish handling facilities or fish protective devices as may be hereafter approved by the Commission upon the recommendation of the Secretary of the Interior.
- (d) All lands constituting the project area and enclosed by the project boundary or the limits of which are otherwise defined, and/or interest in such lands necessary or appropriate for the purposes of the project, whether such lands or interest therein are owned or held by applicant or by the United States; such project area and project boundary being more specifically shown and described by certain exhibits which formed part of the application for license and which are designated and described as follows:

EXHIBIT J

Drawings in two sheets, Sheet 1 signed by C. A. Erdahl, Acting Mayor and Commissioner of Public Utilities, December 24, 1948, and Sheet 4 signed by C. V. Fawcett, Mayor, and approved by C. A. Erdahl, Commissioner of Public Utilities, June 15, 1949 and comprising:

Sheet 1 (FPC No. 2016-1) entitled "Location Map"; Sheet 2 (FPC No. 2016-4) entitled "General Project Map."

- (e) The principal structures referred to above, the location, nature and character of which are more specifically shown by the exhibits hereinbefore cited and by certain other exhibits which also formed part of the application for license and which are designated and described as follows:

EXHIBIT L

Drawings in 13 sheets, signed by C. V. Fawcett, Mayor, and approved by C. A. Erdahl, Commissioner of Public Utilities, Sheet 1 on December 24, 1948 and the other sheets on June 15, 1949, and comprising:

Sheet 1 (FPC No. 2016-2) entitled "Mayfield Dam, General Plan";

Sheet 3 (FPC No. 2016-5) entitled "Mayfield Dam, Arch and Thrust Blocks, Plan and Sections";

Sheet 4 (FPC No. 2016-6) entitled "Mayfield Dam, Cross Sections Thru Spillway";

Sheet 5 (FPC No. 2016-7) entitled "Mayfield Powerhouse, Plans and Sections";

Sheet 6 (FPC No. 2016-8) entitled "Mayfield Powerhouse and Intake, Typical Section";

Sheet 7 (FPC No. 2016-9) entitled "Mayfield, One Line Diagram";

Sheet 8 (FPC No. 2016-10) entitled "Mayfield Switchyard, General Plan";

Sheet 11 (FPC No. 2016-13) entitled "Mossyrock Powerhouse, Plans and Sections";

Sheet 12 (FPC No. 2016-14) entitled "Mossyrock Powerhouse, Typical Cross Section and Elevation";

Sheet 13 (FPC No. 2016-15) entitled "Mossyrock One Line Diagram";

Sheet 14 (FPC No. 2016-16) entitled "Mossyrock Switchyard, General Plan";

Sheet 9 (FPC No. 2016-17) entitled "Mossyrock Dam, Plan and Section"; and

Sheet 3 (FPC No. 2016-18) entitled "Mossyrock Dam, Spillway Section."

EXHIBIT M

A statement in four sheets entitled "General Description and General Specifications of Proposed Mechanical, Electrical and Transmission Equipment for the Project" and filed June 20, 1949.

- (f) All other structures, fixtures, equipment or facilities used or useful in the maintenance and operation of the project and located on the project area, including such portable property as may be used or useful in connection with the project or any part thereof, whether located on or off the project area, if and to the extent that the inclusion of such property as a part of the project is approved or acquiesced in by the Commission; also all riparian or other rights, the use or possession of which is necessary or appropriate in the maintenance and operation of the project.
- (65) The Secretary of the Army and the Chief of Engineers have approved the project plans insofar as they affect the interests of navigation and flood control, upon the license conditions hereinafter provided for the protection of such interests.
- (66) The Secretary of the Interior reported that he was hopeful that with proper effort and study the fish problem could be solved and recommended stipulations for the protection of fish-life. The substance of his recommendations has been included, with the exception of a requirement limiting the fish protective devices

to those approved by State agencies, a limitation which does not appear appropriate in a Federal license.

The Commission *orders* :

- (A) This license is issued to the City of Tacoma, Washington, under Section 4 (e) of the Act for a period of 50 years, effective as of the first day of the month in which the accepted license is filed with the Commission by the Licensee, for the construction, operation and maintenance of Project No. 2016 upon the Cowlitz River, a stream over which Congress has jurisdiction, and upon lands of the United States, subject to the terms and conditions of the Act which is incorporated by reference as a part of this license, and subject to such rules and regulations as the Commission has issued or prescribed under the provisions of the Act.
- (B) This license is also subject to the terms and conditions set forth in Form L-6 entitled "Terms and Conditions of License for Unconstructed Major Project Affecting Navigable Waters and Lands of the United States", which terms and conditions are attached hereto and made a part hereof; and subject to the following special conditions set forth herein as additional articles:

ARTICLE 28. The Licensee shall commence construction of the project within two years of the effective date of this license; shall thereafter in good faith and with diligence prosecute such construction; and shall complete the project works in 36 months.

ARTICLE 29. The Licensee shall prior to flooding clear all lands in the bottoms and margin of the

reservoir up to high water level, and shall dispose of all temporary structures, unused timber, brush, refuse, or inflammable material resulting from the clearing of the lands or from the construction and maintenance of the project works. In addition, all trees along the margin of the reservoir which may die during the operation of the project shall be removed. The clearing of the lands and the disposal of the material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission.

ARTICLE 30. Before beginning the construction of any permanent fish ladders, fish traps or other fish handling facilities or fish protective devices, the Licensee shall make further studies, tests and experiments to determine the probable effectiveness of such facilities and devices and shall submit plans therefor and obtain Commission approval. In making such studies, tests and experiments and in the preparation of final design plans, the Licensee shall cooperate with the United States Fish and Wildlife Service and the Departments of Fisheries and Game of the State of Washington. The Licensee shall continue its studies and investigations with respect to its proposed program of stream improvement and hatchery facilities. The Licensee shall submit quarterly reports to the Commission of its activities hereunder.

ARTICLE 31. The Licensee shall construct, maintain and operate such fish ladders, fish traps or other fish handling facilities or fish protective devices and make such stream improvements and provide such

fish hatcheries and similar facilities and comply with such reasonable modifications of the project structures and operation in the interest of fish as may be prescribed hereafter by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior.

ARTICLE 32. The Licensee shall pay the United States the following annual charges for the purpose of reimbursing it for the costs of administration of Part I of the Act; One (1) cent per horsepower on the authorized installed capacity (474,000 horsepower), plus two and one-half ($2\frac{1}{2}$) cents per 1,000 kilowatt-hours of gross energy generated by the project during the calendar year for which the charge is made. The Licensee shall also pay to the United States such charges as may be specified hereafter for the purpose of recompensing the United States for the use, occupancy and enjoyment of its lands, including transmission line right-of-way.

ARTICLE 33. The Licensee shall, within two years of the effective date of this license, file Exhibits F and K in accordance with the rules and regulations of the Commission.

ARTICLE 34. During the months of October through May flood storage space reservation in Mosyrock Reservoir corresponding to reservoir level elevation 750, full reservoir, on 1 October, decreasing uniformly to elevation 723 on 1 December, remaining constant at elevation 723 from 1 December to 1 February, increasing uniformly from elevation 723 on

1 February to elevation 745 on 1 May and reaching elevation 750 no sooner than 1 June, shall be kept available for the temporary storage of flood water. During floods the gates shall be operated, in conjunction with the operation of the Mayfield Reservoir, so as not to exceed a flow of 70,000 cfs (bank full capacity) at Castle Rock, Washington, until the reservoir storage, if exceeding the specified reservation, has been decreased to the specified reservation.

ARTICLE 35. In the interest of navigation:

- (a) The minimum release of water at the Mayfield plant shall be 2,000 cubic feet per second; and
- (b) The rates of change of release of water from the Mayfield plant shall not exceed that which will cause a change of water level at the City of Castle Rock, Washington, of one foot per hour, either up or down.
- (C) The exhibits specified in paragraph (63) above are approved as part of this license.
- (D) This order shall become final 30 days from the date of its issuance unless application for rehearing shall be filed within the 30-day period provided by Section 313 (a) of the Act.
- (E) This license shall be accepted and returned to the Commission within 60 days from date of issuance of this order.

By the Commission.

(SEAL) /signed/ LEON M. FUQUAY.
Leon M. Fuquay, *Secretary.*

Date of Issuance: November 28, 1951.



APPENDIX B

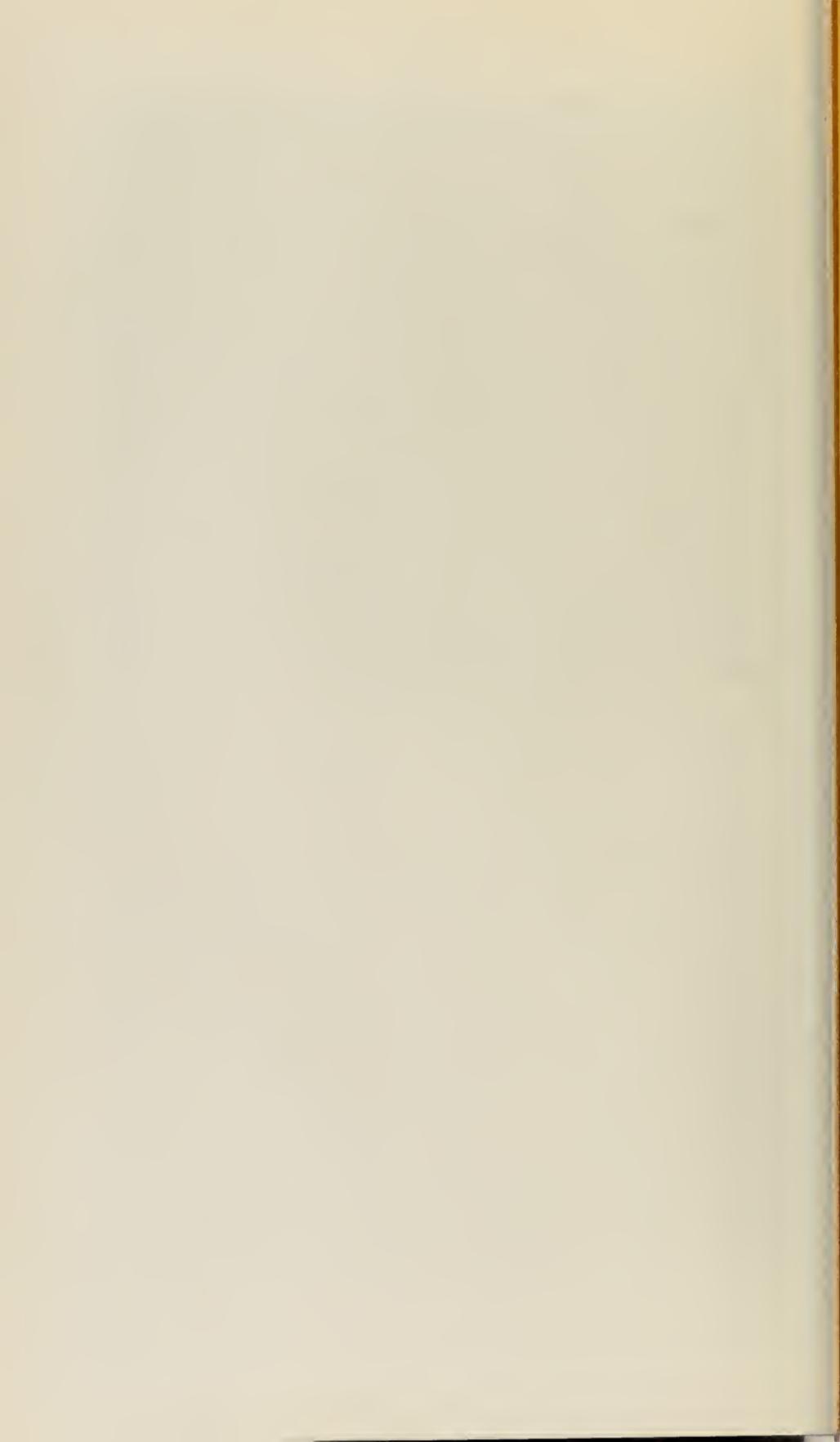
EXERPT FROM PRESIDING EXAMINER'S
RECOMMENDED DECISION**Findings and Conclusions**—"Comprehensive Plan"

It is found, therefore, that the Chief of Engineers has submitted to the Congress for its approval a comprehensive plan for the development of the Columbia River and its tributaries, including the Cowlitz River, and that this comprehensive plan has been formally approved by the Secretary of the Interior and by the Federal Power Commisison as "representing a desirable and coordinated basic framework for the comprehensive development and utilization of the water resources of the Columbia River Basin." The report was approved by the President through the Bureau of the Budget for submission to the Congress. It is found also that the comprehensive plan of the Chief of Engineers includes full recognition and full adoption of the Lower Columbia River Fisheries Plan as conceived by the Fish and Wildlife Service of the Department of the Interior and as now in progress with the aid of specifically appropriated Federal funds. It is also found that this Commission in its formal comments approving the Chief of Engineer's plan and recommendations did not take exception to or suggest modification of the report or the recommendations with respect to the preservation of fishery resources in the Columbia Basin or the scheduling of projects for construction recommended therein with refer-

ence to preservation of the fishery resources, nor has there been any evidence submitted which would indicate that the Commission intends to forward additional comments to the Chief of Engineers or to the Congress which would qualify or withdraw any approval given heretofore. It is found also that the Lower Columbia River Fisheries Plan contemplates, among other things, reservation of the Cowlitz River, a lower tributary of the Columbia River, as a stream to be used by the Fish and Wildlife Service and the agencies of the State of Washington as a means for the preservation and improvement of anadromous fish life for the benefit of the entire basin, and a scheduling of dam construction, with emphasis upon early construction in the upper basin so as to afford the necessary time to improve the lower basin tributaries before all of the main dams (including the Mayfield and Mossyrock developments) in the lower basin are constructed.

It is concluded, therefore, that, unless an applicant for license for a hydroelectric project to be constructed, operated and maintained upon the Cowlitz River before the ten-year period contemplated for completion of the Lower Columbia River Fisheries Plan has expired, can demonstrate to the satisfaction of the Commission, prior to any construction or the issuance of a license therefor, (1) that its over-all plans for the development of the stream for power include plans for reasonably certain protection and development of the fisheries resources of the stream which would be entirely consistent with the prin-

principles and aims of the Lower Columbia River Fisheries Plan and acceptable to the U. S. Fish and Wildlife Service, or, if this cannot be shown, (2) that the economic situation in the area and the need for an additional supply of electric energy, which cannot be obtained from any other source at this time, is *so pressing* as to require development of the Cowlitz River for power purposes with or without fish protective facilities which can be demonstrated prior to initiation of construction to be reasonably certain to accomplish their purposes, a finding at this time under Section 10(a) that the project is "best adapted to a comprehensive plan" for development of the Cowlitz River for all of the purposes named therein would not be warranted, and therefore such a finding would not be in the public interest.





APPENDIX C**Excerpt from Presiding Examiner's Recommended Decision****TACOMA'S NEEDS FOR ADDITIONAL ENERGY AS
RELATED TO REGIONAL NEEDS**

The city and those who espouse its application have placed particular accent upon the need for additional generating capacity to supply the city's system requirements and to augment the sagging over-all regional power supply. It has been established beyond question that while the city is in a preferred-customer category insofar as Bonneville energy is concerned, the city's increasing power requirements and the continued assertion of its preferred status as a municipal customer of Bonneville Power Administration constitute an unnecessary drain on this Federal power supply so long as it has access to usable hydro sites and that the more sold to the city by Bonneville, the less Bonneville has to sell to other non-preference customers which are also in great need of as much of Bonneville energy as they can obtain. These contentions are undeniable, but they point up the fact that Tacoma itself is really not in present jeopardy so far as power supply is concerned. It is probable that if Tacoma persists in asserting its preferred customer status as against the other potential customers of Bonneville which do not enjoy such preferred status, while making no effort to increase its generating capacity, it may become a very unwelcome participant in the operations of the Northwest Power Pool, and, of course, the more

dependent Tacoma becomes on Federal energy supply, the less autonomous it will be as a system.

However laudable it may be for the city to make every effort to increase its own generating capacity in order to reduce its purchases from Bonneville and to make itself a contributor to the regional pool, or at least relatively independent of Federal generating capacity, it would seem that where such efforts appear to constitute a real jeopardy to an important natural resource, i.e., the fisheries of the region, the question of the impact on that other resource is worthy of closest scrutiny. If the City of Tacoma had no sources of energy other than its own hydroelectric and steam generating capacity, and if additional steam would be economically infeasible, then, and then only, should the question be raised as to whether it is in the public interest to place the fishery resource in jeopardy by installation of high dams across fish migration routes at this particular time.

There has been the contention advanced that the need for construction of these two dams has been rendered even more acute by the acceleration of the national defense program, and that if this license were denied and the project not constructed, the power shortage in the Pacific Northwest would be rendered more acute by the defense power loads. There seems to be little room for doubt that with the establishment of important defense industries in the region, all calling for large amounts of electric energy, every unit of electric generation will be used

to its maximum, and that there will be a need for development of more generating capacity at an early date unless civilian or non-defense consumption is not to be seriously curtailed. Curtailment of non-defense consumption is to be avoided if such be possible, of course, but should total mobilization of industry for war be required, those loads not directly related to a war program would have to be secondary. But as of this time, the Government's policy appears to be that of maintaining high defense production with as little effect upon non-defense production as possible (sometimes called the "guns and butter" policy), and to discourage the expansion of non-defense consumer demand by credit controls, taxes, price controls and allocation of basic raw materials.

While the addition of generating capacity in the Pacific Northwest is highly desirable and necessary from the standpoint of national defense, if the policy of less than the most stringent curtailment of civilian or non-military production continues to prevail, no real case can be made for the installation of this particular additional generating capacity by the city on the basis of its necessity for national defense, if by the installation of such capacity there is a better than even chance that another important natural resource will be unnecessarily destroyed or even seriously impaired by reason of such installation. And such installation would be unnecessary if there are other and ample undeveloped power sources in the basin (whether available for exploitation by Tacoma or not), which have no effect on the fisheries re-

sources. While it cannot be the province of the Examiner *sua sponte* to evaluate all unused sites, even if such were possible,²⁶ the record indicates that (disregarding the aspect of relative cost) there are a good number of hydroelectric sites capable, from an engineering standpoint, of producing large amounts of additional electric energy by the greater use of the Columbia headwaters, headwater tributaries and streams already blocked, and that the development of these sites will have little or no effect upon the Columbia River fisheries conservation program.²⁷ It is the thesis of the proponents of the Lower Columbia River Fisheries Plan that these harmless (to fish) sites should be developed first, even if they are somewhat more expensive than the lower river sites, and then and then only should the question be seriously approached as to whether it is necessary to destroy fishery resources in order to obtain more power. This is the general position adopted by the Army Engi-

²⁶ The record is somewhat deficient in the matter of comparing unused and available hydroelectric sites which could be developed by the Applicant itself in lieu of the Cowlitz sites, and this is understandable. Hydroelectric developments are not planned casually. In order to compare the Cowlitz sites with other undeveloped sites, it would be necessary for someone to undertake almost as intensive study of the other sites as was undertaken for the Cowlitz sites. Such a study would be time-consuming and costly. The Applicant did not undertake such a study. The Interveners did not undertake such a study, and the staff of the Commission does not have the field force and funds to make intensive studies of alternate sites.

²⁷ While the Yale site on the Lewis River is not available to the Applicant, the energy it will produce will have a marked effect upon the regional power supply. On April 25, 1951, the Commission issued a license for the Yale Project which will have an initial installed capacity of 100,000 kw. Provisions are made for another 100,000 kw which the Commission can order to be installed concurrently with the first 100,000 kw if it so desires. By order issued May 2, 1951, the Commission ordered the installation of six 25,000 kva generating units at the Rock Island Project (Project No. 943) which will produce approximately 135,000 kw.

neers which has apparently been concurred in by the Federal Power Commission, and has been reiterated by the President's Water Resources Policy Commission in its recent report.

It is true, of course, that many of the unused sites, particularly the headwater sites referred to, are, for the most part, distant from the load centers where power is urgently needed, and particularly the coastal load centers, and that additional transmission line costs and transmission losses would be involved in their use as compared to the conveniently located Cowlitz sites. Outages will be increased. And the diversity of flow which makes the lower Columbia tributaries (west of the Cascades) so attractive for power sites to augment the power obtained on the main stem is not to be obtained in the headwater streams. It is true also that some of these sites have been recommended by Federal agencies for Federal construction, and from a practical standpoint may not be available for non-Federal development even if the City of Tacoma were to choose to do so.²⁸ It would seem that there are ample undeveloped water power resources in the Basin which, although more distant from Tacoma's load centers than the Cowlitz projects and therefore not convenient or economically feasible for exploitation by Tacoma, if developed by the Federal government or

²⁸ And choice of some sites not included in the plans of the Corps of Engineers might be considered as interference with the recommended program of large, multiple-purpose developments, which may themselves be far too expensive for other than government development.

by the Secretary of the Interior that Cowlitz projects are essential to national defense. Through the Administrator of the Defense Electric Power Administration, which heads up the national defense power program, the Secretary of the Interior, of course, could have notified the Commission that DEPA regarded the Cowlitz project in such category. That this aspect was considered by the Secretary is evident from his letter to the Chairman of the Commission dated October 29, 1949 (Exhibit 6), in which it is stated:

“The Department is fully cognizant of the shortage of power supply in the Pacific Northwest. As the dominant supplier of electric energy in the region, the Federal Government has a major share of the responsibility for the regional power supply. The Department will continue to urge that all practicable steps be taken to the end that the period of power shortage to be kept at a minimum.”

In a subsequent letter, dated May 1, 1950 (Exhibit 8) the Secretary said:

“I reiterate that the Department’s responsibilities in both the fields of fish conservation and hydroelectric development compel us to explore all possible means of reconciling what has appeared to be an outright clash of interests.

“I am hopeful, however, that with proper effort and study this problem can be solved.”

If the Applicant were permitted to commence construction of the Cowlitz project immediately, there would be three years spent in such construction, at least, which seemingly would make this source of

by non-Federal interests under license, could supply to the regional net all of the energy that would be needed in the region in the foreseeable future without the objectionable features of present use of the Cowlitz sites.²⁰ While national defense is, in a real sense, the responsibility of every citizen, and of every city, and of every State, the Federal Government, through the Congress, obviously has a primary responsibility in that respect of a greater magnitude than the responsibility of any State or municipality. Particularly is this so since the Federal Government has already assumed a major role in the development of the hydroelectric resources of the Pacific Northwest, and power production and use have been geared to the Federal program, particularly in that region. However desirable it may be for the City of Tacoma to achieve greater independence with respect to power development and to supply its own requirements from its own nearby facilities, and therefore to become a power creditor region-wise rather than a debtor, if the cost of achieving such independence is the substantial impairment of the fisheries resource, the cost would appear to be far too great as of the present date. It should be noted that the record is devoid of any communication or suggestion

²⁰ Projects authorized and recommended for authorization would provide nearly 8 million kilowatts of additional energy. The authorized projects, which would provide 2,266,500 kw are: Chief Joseph, Ice Harbor, Lower Monumental, Little Goose, Lower Granite, Palisades, Rosa, and Chandler. Recommended for authorization are: Libby, Albeni Falls, Priest Rapids, John Day, The Dalles, Hills Creek, Cougar, Green Peter, White Bridge, Dexter, Hells Canyon, Upper Scriver, and Lower Scriver. This latter group would provide 5,551,600 kw.

energy of dubious value insofar as present defense needs are concerned.²⁰ And if the agencies of the State and sportsmen's organizations continue their opposition as long as possible, it could be that years would elapse before construction of the project could be commenced safely and the necessary financing be given the green light. On October 6, 1948, Virginia Electric and Power Company filed an application for a license to develop the Roanoke Rapids site on the Roanoke River in North Carolina. Despite the most expeditious handling of the application by the Commission and its personnel, and despite the fact that a license has been issued for this project and accepted, the matter is now before a Circuit Court of Appeals and initiation of construction has been held up approximately three years.

²⁰ Currently there is being debated in Congress a bill—H. R. 3294, 82nd Cong., 1st Sess. (Committee on Interior and Insular Affairs) which would authorize an interconnection of the power generating, marketing, and transmission facilities of the Bonneville Power Administration and the Bureau of Reclamation in the states of California, Idaho, Oregon and Washington. This legislation is still in the formative stage, but if such an interconnection were made, it would undoubtedly serve the important function of power interchange in vital areas. Such an interconnection would probably give great relief to the power shortage in the Northwest, and could be effected much sooner than any hydroelectric projects—including the Cowlitz project—could be built and put on the line.



APPENDIX D**BIOLOGICAL SUPPLEMENT TO RECOMMENDED
DECISION OF PRESIDING EXAMINER**

The Cowlitz project proposed by the Applicant includes two high dams in series, which, unless unique fish passage facilities can be devised which are highly efficient, would prevent the natural upstream and downstream migration of anadromous fish in the Cowlitz River and thereby would adversely affect the fishery resources thereof. Being cognizant of this situation, the Applicant believes it has devised a means of passing anadromous fish over both dams upstream and downstream. Further, in addition to the facilities at the dams, the Applicant, by provision for hatchery facilities and through stream improvements, would propose to overcome any adverse effects not eliminated by the fishways installed in the dams and to enhance the fishery potential to the extent economical. Considerable testimony, exhibits and opinions were presented on this aspect of the fishery matter. As the record includes conflicting views on many items of this fishery resource problem, it appears appropriate to set forth herein a rather detailed summary of the evidence relating to this phase of the case.

At the present time the Cowlitz River is one of the important salmonoid (i. e. salmon or salmon-like) fishery resource rivers of the lower Columbia River Basin. In its current condition it is sufficiently

utilized by anadromous fish to produce adequate numbers to permit the taking of a sizeable commercial and sports catch called "cropping" and still leave an adequate number for passage to spawning ground called "escapement" (meaning spawning fish) for reproduction so as to sustain a high population level year after year. Although the Cowlitz River fishery includes some domesticated fresh water fish, its principal value as a fishery resource is due to the anadromous fish, especially the salmonoids which use its waters and beds for spawning and initial rearing of young. To assure an adequate escapement of anadromous fish, the State of Washington controls the numbers of and times when the anadromous fish may be caught both commercially and by sportsmen. The anadromous fish of the Cowlitz River and tributaries comprise the following: spring chinook (or King) salmon, fall chinook (or King) salmon (*Oncorhynchus tshawytscha*), silver salmon (*O. Kisutch*, sometimes called silverside or Coho salmon), chum salmon (*O. Keta*, sometimes called dog salmon), steelhead trout (*Salmo gairdneri*), sea-run cutthroat trout (*Salmo Clarkii*) and Columbia River smelt. The resident fish are whitefish and trout. Of the anadromous group only the spring chinook, fall chinook and silver salmon, the steelheads and cutthroat trout, and the smelt are of sufficient importance to merit consideration in the evaluation of the Cowlitz fishery resource. The relatively few chum salmon found on the lower Cowlitz

River below Mayfield and the resident fish are not indicated to be a significant portion of the Cowlitz fishery. In the State of Washington the salmonoids are classified as food fish and the trout as game fish.

The three groups of anadromous fish which inhabit the Cowlitz River, namely the salmonoids, the seagoing trout, and the smelt, utilize the fresh water areas only for reproductive purposes and for the early rearing of young. These fish spend the greater part of their life cycle in the Pacific Ocean where they attain most of their growth and maturity. The life cycle of each of these groups is different in some respects.

The salmonoid fish, as they near maturity in the ocean, develop the reproductive urge and start to migrate to the same fresh water area where they originated as infants. Upon leaving salt water enroute to the fresh water streams selected by its homing instinct, the adult salmonoid stops feeding and depends entirely upon the energy stored in its body for getting it to its own spawning ground in the fresh water of its "parent stream." After reaching suitable spawning grounds in rapidly moving water, the salmon make large nests (at a depth of one to several feet) in the gravelly bed of the stream, where eggs are laid by the female and then fertilized by the male. Soon, thereafter, the adult parent salmon die, their carcasses adding minerals to the fresh water area. In due time (about 90 days) the fertilized salmon eggs hatch and some of the fingerlings begin mi-

gration to sea almost as soon as the egg yolk is absorbed;^① others may stay in fresh water for varying lengths of time (from 12 to 16 months), depending upon whether they are spring chinook, fall chinook or silvers. The fingerlings of the salmonoids attain only a small part of their ultimate weight in fresh water, and it is during the salt water phase of their life cycle (several years) that they attain the major portion of their growth and size.

The steelhead trout have a life cycle very much like that of the salmonoids. Steelheads spend about 20 months in fresh water, migrate to sea in the second spring, spend less than two years at sea, and then reenter the Cowlitz as mature fish. More than 50 percent of steelheads mature after two years in salt water. Steelheads may spawn as often as two or three times before dying. Some come back to spawn on successive years while others take two years to redevelop sexual products. Steelhead, like the salmonoids, almost invariably return to the areas where they were spawned. However, they feed to some extent in fresh water.

The cutthroat trout spend the first two years in fresh water and then migrate seaward. They feed in salt water for four or five months and then reenter the Columbia, then the Cowlitz, and follow the salmon, feeding on their eggs, and then go back to sea and return to spawn. They, like the steelhead, spawn more than one time.

^① The infants subsist on the yolk sac for about the first 30 days of life.

There is a commercial smelt fishery on the Cowlitz River. In addition, there is an extensive sports smelt fishery. Unlike the other anadromous fish, the smelt do not always return to the same stream to spawn and are quite unpredictable in this respect. The smelt attain maturity in three or four years then spawn and perish after spawning. Adult smelt are about seven inches long, and about eight fish weigh one pound.

The important salmonoid fish of the Cowlitz River Basin use various parts of the streambeds for spawning. The spring chinook use the upper main channel of the Cowlitz River and particularly the Cispus River for spawning. The Cispus River enters the Cowlitz above the head of the Mossyrock Reservoir site. About 96 percent of the spring chinook spawn above the Mayfield site. The fall chinook almost entirely spawn in the main stem of the Cowlitz and in its larger tributaries, namely, main Cispus, Toutle and Coweman. About 47 percent of this species spawn above Mayfield. The silver salmon spawn in the Tilton, Cispus and Toutle Rivers and many smaller tributaries of the Cowlitz. About 78 percent of the silvers spawn above Mayfield.

The steelhead trout do not use the main stem of the Cowlitz for spawning, because they prefer the clearer water in the tributaries. They do not ascend as many small tributaries as the silver salmon do, steelhead preferring the larger streams. There is much yet to be learned about the sea-run cutthroat

trout. In general, however, their habits are comparable to those of the steelhead trout.

A suitable spawning area for salmon must be biologically and physically accessible with respect to water temperature, and the river bed must be composed of rubble larger than pea gravel and boulders less than six inches in diameter. The depth of water should range between 1.5 and 12 feet, the velocity of water over beds from 1 to 3.5 feet per second, and water must move through the gravel, which must be somewhat loose so as to provide oxygen to the incubating fish eggs.

The steelhead trout, and presumably the cut-throat trout also, spawn in suitable gravel where there is a good flow of water through gravel and where it is well aerated.

The smelt use fine pea gravel and very coarse sand for spawning in depths of water varying from two or three inches to six or eight feet. They prefer a stream which has in its source water some glacial silt. The smelt migrate up the Cowlitz for about 15 or 16 miles from its mouth to approximately Castle Rock and they use this stretch of the lower part of the river for spawning.

The spring chinook salmon first enter the Cowlitz River in late March and continue to migrate up the river well into June. They reach their spawning time in mid-August or later. After the spring chinook reach the spawning grounds in May and June,

they lie in cold water until August before they begin to spawn, and continue to spawn into mid-September.

The fall chinook salmon usually first enter the Cowlitz River in the latter part of August, and may continue such migration into early October. The spawning process begins about as soon as the adults reach their spawning area, reaching a peak early in October.

There are two distinct races of silver salmon. The "early run silvers" proceed up the Cowlitz River at about the same time as the fall chinook, early in September and reach their spawning peak in mid-November. The later run begins to enter the Cowlitz River approximately the 1st of November and continues to migrate up the river into January with spawning following the migratory run immediately and extending into February. There are also several races of steelhead trout. The winter-run race enters the Cowlitz River between November and April as sexually mature fish, and spawning takes place from the latter part of December to March and April. The summer run and spring run races of steelhead trout are not sexually mature when they enter the Cowlitz River, and they stay in the streams until the following winter and early spring before sexual maturity is reached and spawning takes place. Of the three runs of steelhead the winter run is the largest, being from 60 to 80 percent of the total.

The sea-run cutthroat trout runs take place throughout the summer and the last runs come late

in November. They go back seaward and reenter the Cowlitz to spawn in the spring.

The smelt run in the Cowlitz River in December and January when spawning takes place and the eggs stay in the gravel and water from February to late April.

After hatching, the spring chinook fingerlings generally remain in fresh water for a period of over a year and then go to sea during April and May of the second spring. Some, however, feed for about three months and then go to sea.

The fall chinook, which has spawned in October, hatches in winter and, for the most part, feeds for about three months and then migrates to the sea during the high water of April and May.

The silvers, for the most part, after hatching, remain in fresh water for over a year and then migrate to sea during the second spring. To some degree, however, silvers migrate during the first spring after hatching.

The steelhead trout fingerlings spend approximately the first twenty months in fresh water and migrate to sea during the second spring. Adult steelhead, after spawning, begin going back to sea, and they may be seen going downstream while others are spawning in the winter and spring.

The cutthroat trout fingerlings spend two years in fresh water and then migrate to sea, presumably in the spring. The adult cutthroat trout spawn in the spring and then return to the sea.

The smelt hatch during the spring, but the record does not show how long they remain in fresh water before going to sea.

It may be observed from the foregoing that the Cowlitz River is in use by the adult and infant fish throughout most of the year, which would eliminate the possibility of releases of water from any power project which would take care of the fish in large part at any particular month or during any particular season.

Logging activities have increased the rapidity of water run-offs during the spring when heavy rains occur. Consequently, as a general proposition, the streams run lower in the summertime than they did before the coming of man, and this reduced flow is deleterious to those species of fish which reside in the streams during the summer. Damage due to logging as it may affect runoff, however, is not of much consequence on the Cowlitz River. There are no irrigation diversions or industrial operations above the Longview-Kelso area changing the flow pattern of the Cowlitz River so as to adversely affect the productivity of anadromous fish. Although there are no dams on the main Cowlitz River now, should dams be constructed in accordance with the plans of the Applicant, such dams would change in some measure the present ecology[®] of the river, in that it is expected that some physical and chemical changes would take place in the natural environment which

[®] Ecology: The branch of biology which deals with the mutual relations between organisms and their environment; bionomics.

may affect the population of plants and animals that live in the environment.

On one tributary of the Cowlitz a log jam blocks one fork and on another fork the water is toxic, making it unsuitable for fish. These conditions affect adversely the fish producing capacity of the stream, if otherwise usable, but they are correctible if circumstances indicate a need. Correction of this type of condition is contemplated by the Lower Columbia River Fisheries Program.

Certain types of organic pollution are beneficial to fish life in that they provide a desirable ecological balance in the stream. Other types of pollutants, such as heavy metals, actual toxic materials and waste products due to lumber, pulp or paper operations are deleterious to fish. The presence of pollution at the mouth of the Cowlitz, which is now under study, has affected, and will continue to affect to some extent, the productivity of fish, as it results from pulp waste. Dilution of such harmful pollution as may exist by better regulation of flow would be beneficial to productivity of anadromous fish on the Cowlitz River, but the extent of such a benefit would be almost impossible to ascertain in advance.

National obstructions and conditions such as impassable falls, log dams and swift currents close off certain spawning grounds to anadromous fish. The effect of these has been to keep the actual productivity of the Cowlitz River somewhat below the productivity of which it is capable.

The fishery facilities proposed by the Applicant on the Cowlitz River at Mayfield and Mossyrock Sites for passing upstream migrants.

(1) Handling upstream migrants during the construction period

During the period of construction the City proposes to pass the upstream migrants through a diversion tunnel in each of the two dams. The diversion tunnels at Mayfield and Mossyrock dams will be 460 feet long and 1510 feet long, respectively.

During the construction of Mayfield dam the natural stream will be unwatered for a period of only three or four months, that is, July to October, when the flows are normally low. The tunnel will be designed so as to run partially full of water during the normal summer flows and with velocities low enough for passage of upstream migrants. During the period of filling the Mayfield reservoir, the City plans to pump water into the fish ladders to attract the fish into them, trap the fish and haul them above the dam. The record indicates that the problem of handling upstream migratory fish during construction of Mayfield dam could be satisfactorily solved, and even if substantial losses occurred during this relatively brief period, such losses could be overcome by later transplantation and reestablishment of the impaired run.

During the construction of Mossyrock dam the problem of handling upstream migrants would be a more serious one. The diversion tunnel would be

much longer, and the river would be blocked for a period of about eighteen months. The upstream migrants might be able to pass through the velocities in this proposed tunnel during the period of normal flow. However, the particular objection of the Interveners has been the distance to be traveled in darkness without resting pools, and against excessive currents during periods of high flow. Witness Barnaby of the United States Fish and Wildlife Service testified that the velocity in the Mossyrock tunnel should not exceed three feet per second. Exhibit No. 63 in this case shows that flows with velocities of less than three feet per second will prevail at the edges of the tunnel when as much as 10,000 cubic feet per second is passing through the tunnel. This flow is exceeded only about 7 percent of the time. If further tests showed the desirability of lighting the tunnel, there appears to be no engineering reason why this could not be done.

During periods of flow in excess of 10,000 cfs., and during the period of filling the reservoir, the City would utilize the fish ladder so as to attract the upstream migrants to a point where they could be trapped and hauled above the dam. *It cannot be determined from the record (or from any other source at this time) to what extent the upstream migrants would be likely to use the Mossyrock diversion tunnel.* However, an interim process of trapping and hauling would promise some insurance against undue losses. If the fish passage facilities to be installed as permanent fixtures could be shown to

promise satisfactory permanent results, temporary losses due to dislocation during construction could be tolerated.

(2) *Upstream fish-passing facilities for use during the operating period*

The City proposes to construct fish ladders at the Mayfield and Mossyrock dams for passing the upstream migrants from tail water to head water. The ladder at Mayfield would be 185 feet in height and the one at Mossyrock 325 feet in height.

The facilities proposed for installation at the Mayfield site contemplate a collecting flume across the front of the powerhouse with an opening to the fishway at each end of the powerhouse with sufficient velocity discharge for the attraction of fish. A fish barrier would be located immediately above the powerhouse to prevent any fish from ascending the stream above the powerhouse and to divert the fish into the collection system of the fishways. The fish ladders would consist of a series of pools, each one foot in elevation above the preceding one, and would be four or five feet deep with a weir at the lower end, with one foot of water flowing over the top. The pools would be about 16 feet long. Resting pools would be provided at various points of the ladders.

The facilities proposed for installation at Mossyrock contemplate a fish barrier located at the upstream end of the powerhouse for the purpose of diverting fish into a fish ladder of similar design as

the one at Mayfield. Sufficient velocity discharge would be provided at the entrance to the fishway for attraction of fish. In order for the fish to enter the Mossyrock reservoir at various pool elevations (because this reservoir has a maximum drawdown of 100 feet) the Applicant contemplates as one method, five passageways or tunnels running partially filled through the upper portion of the dam at each 25 foot elevation above elevation 650, so that the maximum distance of passing the upstream migrants down into the reservoir by means of a smooth, watered chute or slide would vary from 0 to 25 feet.

If the ladder method of handling upstream migrants were to be found to be unsuccessful in actual practice, the City proposes another alternative method, i. e., trapping and hauling similar to the installation made by the Corps of Engineers at Mud Mountain Dam, Washington, or a combination of ladders and hoist. Fish locks such as are proposed at the McNary Dam might also be used.

The plan of the City, proposing the use of fish ladders, was strongly opposed by the witnesses for the Interveners. An analysis of the testimony on the various features of the proposed facilities would be appropriate herein:

(a) *The fish rack or barrier*

The fish experts who appeared on behalf of the Interveners questioned the adequacy of fish racks. This testimony was based principally on the experience with racks on other streams, particularly the

Balls Ferry Rack in Sacramento River below Shasta Dam. The evidence indicates that in most instances the racks were not properly designed to withstand high flows. One witness testified that if the racks are properly constructed, the loss of fish will be small. Most of the criticism concerning the racks was directed to their use during the period of construction when the river flow is uncontrolled. In this connection, Dr. Hubbs suggested that the rack should have movable sections to permit the fish to pass during construction. After the project is in operation, the river would be controlled and the racks would be subject to floods or heavy debris only on very rare occasions. Regulated flows in excess of 10,000 cfs. at Mossyrock dam would prevail only about 2 percent of the time, based on the flow period of record. The Staff contends that, from an engineering standpoint, it is inconceivable that a fish rack could not be adequately designed to withstand the flows that would occur at the racks. In any event the fish racks could be tested by model study before actual construction and installation and do not seem to offer an insuperable problem.

(b) The fish ladders

The testimony of the fish experts for the Interveners indicates that the fish ladders at the Mayfield and Mossyrock dams would not prove successful, particularly because of their extreme height. To date, the highest dam that has been successfully laddered in this fashion is Bonneville Dam, which re-

quires ladders only 65 feet in vertical ascent. The principal objection of the fish experts for the Interveners is that the fish arriving at Mayfield and Mossyrock dam sites will be greatly weakened due to their advanced sexual maturity and therefore would not have sufficient stored energy to climb the ladders with resulting failure to spawn and reproduce. There might also be considerable delay in finding the ladders. Witnesses Barnaby and McKernan testified that the salmon would expend more energy in going up the ladders and through the pools than they would by traversing the same stretch of the natural river. This testimony was disputed by Dr. Hubbs, fish biologist for the City. The testimony of several witnesses for the Interveners indicates that it would take at least a life cycle of four years to determine whether the upstream migrants which successfully negotiated the ladders had failed to spawn and reproduce. They recommended, therefore, that the ladders be tested over several life cycles of the various species of fish on some other streams. The Staff points out that the record does not indicate what comparable dams are available for such testing or who would bear the considerable expense involved in such a test. The fact that such testing would be expensive and that dams may not be available for conducting such tests does not alter the fact, however, that this method would be the most practicable one for determining in advance whether the fish ladders of such a height would actually work.

The testimony of Dr. Hubbs, fish biologist for the City, recommends that a combination ladder system and hauling system be adopted for passing upstream migrants over the dams. The hauling system would be used for handling the fall chinooks and the ladder for the spring chinooks because the probability of the fall chinooks climbing the ladder would be less since they are nearer sexual maturity. However, it was his opinion that the fall chinooks would also successfully climb the ladder although he had no detailed evidence physiologically or by observation which would support his opinion to the extent that it could be relied upon in the absence of actual observation of such a process.

(c) Resting Pools

The testimony of the witnesses for the City and the Interveners is at considerable variance with regard to the effectiveness of resting pools in the proposed ladder. The Interveners claim that resting pools should not be included in a ladder because the salmon would come to rest therein and might fail to proceed to the top of the ladders. On the other hand, the City's witness, Dr. Hubbs, claims that resting pools are desirable to permit the salmon to recuperate strength in ascending the ladders. He testified that salmon take advantage of resting pools in natural streams. He also testified that additional advice and experimentation is desirable. With this latter observation the Examiner is heartily in accord.

(d) The attraction of fish into the ladders

Several witnesses for the Interveners who have had considerable experience in the salmon field, testified that the delay encountered in finding the entrance to the proposed fish ladders would have a serious effect on the salmon and might result in mortality of the fish before reaching the spawning grounds. Dr. Hubbs, the sole expert for the City on this subject expects that losses due to delay in finding the ladder would be small. The testimony requires the conclusion that the information on this subject is meagre, and extensive experiments would be required to (1) determine the number and exact locations of the entrances to the fish ladders, and (2), to establish the velocities necessary to attract the fish. In this connection the City indicated its willingness to give this matter further study, but after a license is issued. This study period would consist of the relatively short period between the date when basic construction of the project would commence and the date the ladders would be installed. The City would be willing to provide sufficient entrances to the ladders at the locations recommended by the fishery interests.

(e) Passing upstream fish into Mossyrock Reservoir

A proposed method of passing the upstream migrants into the Mossyrock reservoir at various elevations and drawdown consists of five passageways through the upper portion of the dam at each 25-foot

elevation above elevation 650 so that the distance through which the upstream migrants would pass in moving from the ladder to pass into the reservoir would vary from 0 to a maximum of 25 feet. The fish would be expected to slide down a smooth watered chute. Witness Barnaby for the Interveners testified that passing fish down into the Mossyrock reservoir in the manner proposed by the Applicant would be likely to injure the fish. Dr. Hubbs, fish expert for the City, testified that with proper experimentation the chute could be designed to pass the fish safely into the reservoir, and probably this view is more acceptable although the guesswork aspect at this stage is very apparent.

(f) Trapping and hauling upstream migrants

There is an alternative method for passing the upstream migrants over the high dams in the event of failure of the ladders, and this consists of trapping and hauling. The method proposed by the Applicant would involve the passing of the upstream migrants into a ladder, there trapping them, and then having the fish hauled and released at some point above the uppermost dam. There is evidence in the record indicating that this method has proved to be reasonably satisfactory at Mud Mountain Dam, Washington, a flood control project constructed by the Corps of Engineers, although qualitative figures on fish deaths occurring after their release due to injuries incurred in handling are not available. The 1948 report of the Washington State Department of

Fisheries and Game on the Cowlitz project states that trapping and hauling fish would be reasonably efficient, and that no significant damages are expected to result from such an operation. This method of passing upstream migrants over dams is being used at other projects and is planned by Washington State Department of Fisheries for passing fish over Tumwater Falls in connection with the Deschutes River Project, Washington. Witness Barnaby for the Interveners testified that in his opinion if the public interest requires immediate construction of dams on the Cowlitz, the best method would be to trap and haul the upstream migrants.^③

The Fishery facilities proposed by the Applicant on the Cowlitz River at Mayfield and Mossyrock Development for passing downstream migrants.

(1) During the Construction Period

At each of the proposed dams the City would construct large diversion tunnels to pass the river flow during the construction period when it is necessary to unwater the riverbed or during other phases of construction. The downstream migrants during this period would have to pass through these tunnels. During low flows these tunnels should offer no particular hazard since the water velocities would be low and a good share of the fingerlings apparently go downstream at night. During high flows, espe-

^③ But "The consensus seems to be that less damage by abrasion would occur and a much higher proportion of successful crossing of the dam would result if mechanical means (trapping and hauling procedures) were not used." See Applicant's Exhibit 10, Appendix, pp. 2 and 4.

cially at the Mossyrock tunnel which would be in operation for about eighteen months, the fingerlings which migrate downstream would probably be subject to a somewhat greater hazard in passing through such tunnels. Stream flow records, however, show that during the spring months of April and May, when the bulk of fingerlings migrate downstream, the river flows exceeded an average monthly flow of 12,000 cfs., only on two occasions during the 39-year period of record (1908-1946). A flow of 12,000 cfs. would produce a velocity in the Mossyrock tunnel of about 13 feet per second which should not be detrimental to the fingerlings. The record indicates, therefore, that the problem of handling downstream migrants during the construction period could be adequately solved.

(2) *During the Operating Period*

The downstream migrant fishery facilities proposed for use after construction of the dams consist of means of screening the water before it enters the intakes to the powerhouse and of passing the fingerlings hydraulically from headwater to tailwater. At Mossyrock, the fingerling system consists essentially of fish intakes adjacent to the turbine entrance screens, water passages to direct the water containing the fingerlings into the dam and thence into collecting chambers for subsequent depressurizing and releasing into fish ladders for passage downstream. A similar system, except for screening of flows, is also provided at higher levels in the dam above the turbine intake levels.

The collection chamber would contain a fish screen to prevent the fingerlings from passing through the conduit system into the turbines. This screen was the subject of considerable testimony by the Interveners' witnesses who claim the screen would clog due to debris or would cause injury to the fingerlings. The fingerling entrance ports were also the subject of considerable testimony because the opponents did not believe the fingerlings would be able to find or use them, especially in the upper levels of the dam away from the turbine intake entrances. Testimony with respect to the chances for a successful operation of these ports was quite conflicting in that some expert testimony indicates that they would work satisfactorily, while other witnesses assume that the fingerlings would have to be very close to a port before being attracted.

At Mayfield there would be no collection chamber or depressurizing of the fingerlings. They are to be screened in front of the turbine intakes and passed directly into a fish ladder for descent into the natural channel below the dam.

The preliminary hydraulic design of the fingerling system at Mossyrock is such that flows through it can be varied over a considerable range to accommodate the various fish habits which might be encountered.

(3) Passage of larger fish through the downstream dam

The water passages through the downstream fingerling system are sufficiently large to pass the

adult steelheads and trout which migrate downstream after spawning. Whether or not these fish would actually use such facilities is not known, and this question cannot be answered in advance, unless a full scale model is employed.

(4) Screening of intakes to turbine entrances

The entrances to the Mossyrock turbines constitute large areas located at considerable depths in the reservoir. The problems of keeping these screens clear of debris and fish would undoubtedly entail great difficulty in design, construction and operation.

At the Mayfield dam the fish screens would be closer to the surface and the serious problem of design, construction and operation would prove easier of solution (if the problem is capable of any solution whatever).

The Applicant and the Interveners conducted inconclusive screen model tests to determine the rapidity of clogging. The Applicant found that the water at the intakes of the Alder dam (where its tests were conducted) carried little debris, while the Interveners' test indicated that the water passing through the Baker River power plant carried sufficient debris to require the screens to be cleaned after three to five days of operation. A similar cycle of cleaning on the proposed dams would entail great maintenance costs if the cleaning were done as frequently as necessary, due to their excessive depth. There is no real evidence of any kind to indicate what might be expected on the Cowlitz River with

respect to debris which might clog fish screens, particularly the ones in front of the turbines at Mossyrock. There is also no evidence which might indicate the economic consequences which would result from frequent cleaning of the screen. The Staff says that it is inconceivable that such maintenance could materially affect the economics of the proposed development. The real dangers lie in the possibility that (because clogging of the screens will not be observable), the operators would not clean the screens as often as desirable, and in the possibility that such cleaning would not be practicable because of depth.

(5) *Predatory fish*

There was some testimony that predatory fish would congregate in the vicinity of the entrance ports in the collection chambers, and in the fish ladders and feed on the fingerlings while they were passing through the system. This testimony did not establish that such losses would exceed those which occur in nature due to the same predators. Also, since the fingerlings apparently migrate chiefly at night and since the predators feed by sight, there is no reason to expect a decimation of fingerlings which could be attributed to improvement of predator conditions.

(f) **The fishery conservation practices, projects and facilities proposed by Applicant**

In connection with this proposed project, the Applicant has suggested certain means that it would undertake to conserve the fishery resources of the

Cowlitz River. These are presented under the following topics:

(1) The laddering of natural obstructions and falls

The Applicant proposes to provide laddering or other suitable means to pass salmonoid and searun trout over natural obstructions and troublesome falls. Interveners opposed to the Applicant noted that the Lower Columbia River Fisheries Program includes the same stream improvement matters, and suggests that nothing new would be added by the Applicant. The Lower Columbia River Program is discussed in considerable detail in this decision, and, to the extent that the Applicant's program would provide facilities which would not be expected to be undertaken under that program, it would of course be an additional benefit. Obviously, if the Applicant finances any or all of the stream improvement program, it would be making a definite economic contribution to the Lower Columbia Fishery Program. The proposals of the Applicant in this respect, however, are so vague and indefinite at this time as to not be susceptible of evaluation.

(2) The provision for fish-hatching facilities

The Applicant, if permitted to develop the Cowlitz sites for power, would provide such fish hatcheries as may reasonably be necessary for the purposes of the Cowlitz project. To the extent that such hatcheries are in excess of those proposed in the Lower Columbia River Program as it relates to the Cowlitz River, they would of course be definite im-

provements. Further, if the Applicant participated in the costs of such fish hatcheries, it would be making a definite contribution to the fishery program, thus relieving to some extent the burdens upon State and Federal funds for that purpose. But if the offer of the Applicant, which is too indefinite to be weighed for the purposes of this decision, were merely to replace what it would destroy in the way of fishery resources, there would be no particular benefit to the fishery program. No specific offer by the City has been presented and the matter of the City's proposal to provide additional fish hatcheries should be crystallized. It should be noted, however, that the record states again and again that fish hatcheries, no matter how plentiful, do not appear in themselves to be capable of preserving or replacing the total natural fish productivity of any stream. This is due in part to the fact that the rearing of fish by artificial methods is attended by some unavoidable losses attributable to disease and injury arising from the confining and handling of the immature and relatively delicate young fish.^④

**(3) The Increase in spawning area above and below
Mayfield**

The increase in spawning area above Mayfield would be attributed to laddering of obstructions now blocking fish migration and the removal of material and other obstructions blocking migration in

^④ The Army Engineers have planned fish ladders and locks for McNary Dam because the Lower Columbia River Fisheries Program cannot maintain the fish run independent of present upstream migration.

varying degrees which is the same kind of activity proposed by the Fish and Wildlife Service in its long range Lower Columbia River Fishery Program. There is not sufficient evidence in the record to show whether Applicant's plan would provide additional spawning area above Mayfield in addition to that contemplated in the Lower Columbia River Program. This feature would merit further study only if there were a reasonable chance that the spawned infants could ever get to the Pacific Ocean through the two dams.

There would definitely be some increase in spawning area below Mayfield if the minimum flow were increased from 1,092 to 2,000 cfs., but the amount of such increase has not been determined. The gain in spawning area below Mayfield which might result from increasing the flow from 1,550 cfs. was estimated by the Interveners to be 65,070 square yards. It might well be, due to riverbed contours, that the gain in spawning areas in the riverbed effected by increasing the flow from 1,092 to 1,550 cfs. would be in the order of 120,000 square yards. Further studies would show the actual gain, but it must be remembered that merely increasing water flow or depth would not necessarily increase the spawning area if additional gravel beds were not provided, and the organic matter which is deleterious to spawning fish were excessive.

It has been suggested that the gain in spawning area below Mayfield resulting from the increased

minimum flow of 2,000 cfs. would not be of practical value because of the adverse effects of daily variations of flows due to power operations. As the Cowlitz smelt ran into the Lewis River during 1949 and 1950 below the Ariel hydroelectric plant which is operated as a peaking plant with resultant fluctuations and flows, the effect of variations and flows on smelt, at least, does not appear to be adverse. Power operating and load curve studies show that it is not necessary to run the Mayfield plant for peaking and it could be run at constant loads if necessary.[Ⓞ] Further, it was suggested that there would be a change in temperature and chemical content of the water with additional adverse effects which would more than offset the gains in spawning area. Based on the record, however, it is difficult to analyze the claimed adverse effect of temperatures and chemical content changes because of the benefits therefrom as experienced on the Sacramento River below Shasta and Keswick developments and on the Skagit river below Gorge, Diablo and Ross hydroelectric developments. Those benefits are attributable to the colder water provided from the reservoirs during the summer and fall months. A like situation might exist if the Mayfield and Mossyrock developments were constructed.[Ⓞ]

In short, the gain in spawning area below Mayfield would be somewhat beneficial to those particular

Ⓞ The Staff's recommended order does not, however, contain such a requirement or a reservation of the authority to require such operation in the future.

Ⓞ It is said that the discharge of cold water below the Hoover Dam has made an excellent trout stream of the Colorado, even in the desert.

species which normally spawn below that point, but would probably be of little value to the 96 percent of the spring chinooks, 78 percent of the silver salmon and the 47 percent of the fall chinooks which normally spawn above the sites. There is nothing in the record to establish conclusively that if the dams were built as planned, water temperature or chemical conditions in the river below Mayfield would be adverse to such anadromous fish as are accustomed to use that portion of the river at the present time.

(4) Pollution Abatement below Mayfield

It has been shown by the record that pollution of the harmful type exists on the lower Cowlitz River near its mouth. Although the record does not show whether such pollution is in lethal concentrations, it is to be expected that, with the growth of industry in the lower Cowlitz River, harmful pollution could be so serious if not prohibited by State legislation as to require considerable investment in remedial facilities. An increase in minimum flows from 1,092 cfs. to 2,000 cfs. would be a definite contribution by the Cowlitz project to pollution abatement, but such contribution cannot be properly evaluated in advance.

(5) Spawning Areas in the Cowlitz Project Reservoirs

Data in the record indicate that the Mayfield Reservoir would flood out 116,400 square yards of existing spawning area and Mossyrock Reservoir 298,265 square yards, the total being 414,665 square yards. In the Mayfield Reservoir there would be 200 acres with a submerged depth of less than ten feet.

The amount of the area so submerged that might be suitable for spawning is probably negligible because although salmon have been observed spawning in depths up to twelve feet, temperatures, gravel size and flow conditions were suitable.

The area to be inundated by the Mayfield and Mossyrock Reservoirs is accountable for 90,571 pounds (933,717 pounds times 9.7 percent) of fall chinook corresponding to 6,378 fish. With improved flow conditions and greater spawning area below Mayfield, it is expected that some of the loss of fall chinook resulting from the flooding of spawning areas in the reservoir sites would be offset to some extent by gains below Mayfield. The extent of offset might be estimated with greater accuracy after completion of long-term studies of gain in spawning areas below Mayfield which would result from increasing minimum flows from 1,092 to 2,000 cfs.

The Applicant proposes certain conservation practices, facilities and improvements for conservation of the fishery resources of the Cowlitz River as discussed above. Such proposals and the effects thereof are not sufficiently detailed, however, to permit any appraisal of their effectiveness. While the attitude of the City is commendable and the Fish and Wildlife Service and the State agencies would undoubtedly welcome aid from any source, it is questionable whether any activity of the City along the lines proposed would completely offset the loss of fishery resources consequent to the erection of the proposed dams.